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DEPARTMENT OF DEFENSE WEAPONS TESTING: CONSULTANTS, CONTRACTORS, AND POLICY

HEARING

BEFORE THE

SUBCOMMITTEE ON FEDERAL SERVICES,
POST OFFICE, AND CIVIL SERVICE

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

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DEPARTMENT OF DEFENSE WEAPONS TESTING: CONSULTANTS, CONTRACTORS, AND POLICY

FRIDAY, JUNE 16, 1989

U.S. Senate,
Subcommittee on Federal Services,
Post Office, and Civil Service,
Committee on Governmental Affairs,
Washington, DC.

The Subcommittee met, pursuant to notice, at 9:35 a.m., in room SD-628, Dirksen Senate Office Building, Hon. David Pryor, Chairman of the Subcommittee, presiding.

Present: Senators Pryor, Levin, Kohl, Roth, and Stevens.

OPENING STATEMENT OF SENATOR PRYOR

Senator Pryor. Good morning, ladies and gentlemen. Today, the Federal Services Subcommittee convenes its third oversight hearing on the use of contractors and consultants in the Pentagon. Our focus is the independent office of the Director of Operational Test and Evaluation, or DOT&E, the Pentagon's top weapons testing office.

This hearing, however, will look not only at contractors use but also the questions regarding the adequacy of DOD weapons testing. In fact, adequate testing cannot be separated from contractor use because, as it turns out, the operational testing oversight is virtually today being run by the contractors. Contractors with ties to the weapons being tested regularly review test plans, analyze test results, and prepare test reports. They even write testing policy and have been paid to respond to GAO reports.

Excessive use of contractors and consultants is all too common in Government but it is more dangerous in agencies such as the Office of Operational Test and Evaluation where an independent and unbiased evaluation is crucial, and in this case, required by law. DOT&E is of particular interest this morning to me because I worked very hard with Senator Roth of Delaware to create this office in 1983. At first, our attempts failed. In 1983 we were successful.

This Committee held a hearing on this bill exactly 6 years ago, and it ultimately passed the Senate by a vote of 91 to 5. The issue in 1983 was that in the rush to secure the latest, most sophisticated weapons, we were sending guns, tanks, missiles, ships to our troops, to our sons, in the field before we were sure the weapons would work under battlefield conditions.

The losers were the troops, the soldiers, who received undependable weapons and the American taxpayer, who paid the tab for the billions spent on production and post-production fixes. As we will hear today from the General Accounting Office and the Pentagon's Inspector General, 6 years after setting up the testing office, the United States of America is still sending poorly tested weapons to the troops and spending billions of dollars due to misleading or incomplete testing reports.

Congress has been so disappointed in the testing office that some have spoken of eliminating the office. We wanted as we said then, a tough junkyard dog who would stop bad weapon production. However, what we seem to have created is just another layer of the Pentagon bureaucracy which today is in bed with those firms that make the weapons. In addition to reports of inadequate testing, Congress has been aggravated by DOT&E's attempts to extend its jurisdiction beyond what Congress intended.

For example, although the 1983 law expressly prohibits the operational test office from involvement with "all offices and entities of DOD responsible for research and development," DOT&E has actively pushed to take over parts of developmental testing.

On two occasions, Congress has been forced to approve supplemental legislation to stop the merger of testing functions with those of developmental nature. DOT&E has also been criticized for its involvement in several activities including the Test and Evaluation Council and the Capabilities Improvement Program, the $59 million improvement program, whose funds have been frozen by the House Appropriations Committee. The GAO will comment on these activities which it has been directed to review by committees of Congress.

Against this backdrop, I have asked my Subcommittee staff to review DOT&E issues and DOT&E contract files to determine to what extent contractors might be a part of this problem. The Subcommittee report will be made a part of the record, the report is astounding.[1] It finds, for example, that DOT&E, an office of about 50 people, pays roughly $11 million a year to huge defense contractors to "support" the operational test offices supposedly independent test and evaluation functions.

The contractors include TRW, SAIC, and BDM. Each of these is among the 100 biggest defense prime contractors, and each has millions of dollars of subcontracts with other defense contractors whose products are being tested by DOT&E. Example: SAIC is now being asked to support testing assessments for SDI. At the same time, SAIC is the 26th largest SDI contractor. Tell me that is not a conflict of interest. How can a weapon test be objective when the weapons tester is associated with the weapons production?

Would the FBI or the Inspector General hire the Northrop Corporation to investigate aircraft cost overruns? They would not, but what seems to be business as usual is going on today in weapons testing. This is definitely a problem. It is exactly what Congress tried to eliminate by creating the independent office of operational testing.

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[1] See p. 124 for the report.

The Subcommittee report also found evidence that DOT&E seems to have contractually merged operational and developmental testing. This was precisely what the Congress said in 1983 it did not want to do. A recent $85 million contract states that the DOT&E contractors will be working simultaneously for "the full spectrum of development test and operational test activities." The merger, the marriage, has taken place.

The Subcommittee also reviewed the revolving door issue. Members of the DOT&E staff have gone to work for the major defense firms, many of whom have contracts with DOT&E. Now that does not necessarily indicate illegal activity. However, it demonstrates that DOT&E is part of the buddy system where people move back and forth from industry to Government, from Government to industry.

Not only is the operational test office relying heavily on contractors with possible conflicts of interest to do the testing oversight, but these same contractors are working simultaneously and in coordination with the research and development community. The Subcommittee investigation found a number of other cases of questionable contracting activities at DOT&E including the directing of subcontracts by DOT&E staff and an odd sole-source contract with a small Texas company called Combat Core Certification Professionals. This will be referred to C3P.

We are going to hear a lot about C3P. C3P served as an arms dealer for DOT&E. It purchased Soviet Mig aircraft and other Eastern Bloc weapons for our own operational testing office. Some of these were of Korean War vintage. The C3P contracts were originally highly classified, but were suddenly declassified when DOT&E publicly demonstrated our new foreign military hardware. In addition, the Subcommittee was informed that two associates of the firm have questionable backgrounds, one of whom was debarred from Government contracting as a result of a conviction for the theft of Government property.

These contracts were the subject of several other investigations and associated issues are reportedly the subject of an ongoing investigation. Recent evidence, as late as last evening, highlights several other questions that we will be asking today about this very clandestine operation. There are many serious questions about the operation and management of DOT&E which the Subcommittee will explore today and in a subsequent hearing.

Our purpose is to learn from the problems we've discovered and to help the next Director of Operational Testing. This month the current Director of DOT&E, Mr. Jack Krings, is resigning. I wish him well. I fought his nomination, and I have often disagreed with Mr. Krings, but I have always supported this office. I have always supported the legislative intent which is clear that we should have an independent testing office of our weapons before we send them into the field.

Mr. Krings is not the subject of this hearing this morning. This hearing is about Government management. It is about producing weapons that do not work. It is about having contractors grade their own examination. It is about the conflicts of interest that I think is rife in weapons testing and that I am very sorry about.

Senator Roth.

OPENING STATEMENT OF SENATOR ROTH

Senator **Roth**. Thank you, Mr. Chairman. I want to begin by commending you for holding these hearings. Tough, independent testing of Pentagon weapons is essential for the safety of our soldiers, sailors and airmen, and it is essential if the public consensus is to continue for a strong national defense.

Senator Pryor has played a courageous leadership role over the years on this issue of tough and realistic testing. I have had the pleasure of working with him in the past. I am pleased to join him once again as we work to ensure that weapons are thoroughly and accurately tested in an environment free of improper contractor involvement.

Frankly, I am as concerned today as I was when I held hearings on this issue of weapons testing in 1983 as chairman of the Governmental Affairs Committee. These hearings revealed that we were sending guns, tanks, ships, and other essentials to our troops in the field before we knew that the weapon would work under battlefield conditions.

Reports from the U.S. General Accounting Office, the DOD Inspector General and hearings by several congressional committees indicate that we are not doing much better today than we were in 1983.

Last month the Congressional Military Reform Caucus, which I co-chair, held a panel discussion on operational testing. The discussion revealed that too many weapons still enter full-scale production before they are properly tested. The distinction between operational and development testing has been lost. Contractors, as the chairman has already pointed out, are heavily involved in the testing process, and testing is not as realistic and as objective as it needs to be.

The Caucus compiled these findings in a letter to Secretary Cheney on June 2. Mr. Chairman, I request that this letter signed by 44 members of the Caucus be made a part of today's record.[1]

Senator **Pryor**. Without objection.

Senator **Roth**. The Caucus also developed amendments to respond to two problems which will be discussed today, defining low rate initial production and the use of operational assessments as substitutes for operational tests. Mr. Chairman, I would request that this amendment language be included as part of the today's hearing record.[2]

Senator **Pryor**. Without objection it will be included.

Senator **Roth**. I look forward to today's testimony. And again, thank you for holding this most important hearing.

[Senator Roth's prepared statement follows:]

Prepared Statement of Senator Roth

I want to begin by commending Senator Pryor for holding this hearing. Tough independent testing of Pentagon weapons is essential for the safety of our soldiers, sailors and airmen and it is essential if the public consensus for a strong national defense is to be maintained.

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[1] See p. 156.

[2] See p. 162

Senator Pryor has played a strong leadership roleover the years working with others such as Senator Kassebaum and myself on this issue of operational testing of defense weapons. I have had the pleasure to work with him in the past, and I am pleased to join him once again as we work to ensure that weapons are thoroughly and accurately tested in an environment free of improper contractor involvement. We have before us today three distinguished panels of experts on this testing issue. I look forward to their remarks and the insights they can provide us into this complicated and vitally important process.

Frankly, I am as concerned today as I was when I held hearings on the issue of weapons testing in 1983 as Chairman of the Governmental Affairs Committee. These hearings revealed that we were sending guns, tanks, ships, and other essentials to our troops in the field before we knew that the weapons would work under battlefield conditions. In the rush to secure the latest, most sophisticated weaponry, I fear we are continuing to ask our soldiers in the field, our sailors at sea, and our airmen in the sky to defend their lives and the security of our nation with undependable weapons. We also are asking the American people to pay billions of dollars for production of weapons that are not ready to be produced. Reports from the U.S. General Accounting Office, the DOD Inspector General, and hearings by several congressional committees indicated that we are not doing much better today than we were in 1983.

Last month the Congressional Military Reform Caucus, which I co-chair, held a panel discussion on operational testing. The Caucus discussion revealed that too many weapons still enter full-scale production before they are properly tested, the distinction between operational and developmental testing has been lost, contractors are heavily involved in the testing process and testing is not as realistic and as objective as it needs to be. The Caucus compiled these findings in a letter it sent to Secretary Cheney on June 2. Mr. Chairman, I request that this letter, sent by my co-chair Congresswoman Boxer, myself and other members of the Caucus be made part of the record for today's hearing.

We fought a long, hard fight to require adequate testing for weapons before they are scheduled for production, but we have not seen the full fruits of our labor. Today, we still see too much concurrency in the development of our weapons systems. Cost, schedule, and performance problems are all too common. In 1983, the Senate agreed by a vote of 91 to 5 that decision makers needed a bias-free view on operational testing and evaluation and later in 1987 voted to ensure that live fire testing would also be done before weapons enter production. Strong arguments have been made that independent testing is the essential check and balance to the unavoidable program advocacy of the development and acquisition communities. Only with such independent testing can we be assured of a weapon system's operational effectiveness and suitability.

Our concern here is that in military procurement it is the constituencies the come to bear. I do not mean to suggest that these constituencies are necessarily bad, because they are well intended. There is a valid need to get things done in a timely manner so weapons are available to meet perceived threats, but we must realize that once a weapon system gets started, a constituency is created within the development and acquisition communities which advocates getting the weapon to the field. We must also realize that part of the "life of its own" comes from contractors who want to see the weapon system proceed to production. Our congressional review process adds to the constituency and our political system imposes the threat of disruption, funding instability, and outright cancellation. All of these forces add to the effort to get programs past the magic point where it has acquired enough momentum to survive. Problems can be fixed later.

A major weakness in this approach, however, is that this is a very expensive way to develop weapons. A recent internal DOD study prepared for development of criteria for the readiness to produce decision shows that most engineering change proposals are made after a system enters production. Thus, we continue to repair and modify production systems rather than settle on the right design before production begins. Independent testing and evaluation is our only assurance that we are not rushing weapons into production before they are ready. In voting to create the Offices of Operational Test and Evaluation and Live Fire Testing, the Congress wanted to safeguard against billion dollar weapon systems being produced without adequate testing or being produced despite poor test results. Decisions to proceed with a program cannot be based on faith and promise, but must be based on demonstrated and proven track records.

When we examine the arguments for and against concurrent development and production of weapons, we realize that there are valid positions on both sides of the fence. Concurrency can provide important advantages over the sequential development and production of a weapon system. Most importantly, it can shorten the time required to field a system. It can also achieve cost savings and management efficiencies and can help prevent some unnecessary program changes. However, there are significant risks in concurrency. The main risk is that after production begins, problems can be discovered which require major redesign or modification. A recent Congressional Budget Office Study found ambivalent evidence that concurrency is a major factor in either schedule delay or cost growth. The study did find clear evidence, however, that some highly concurrent programs have experienced significant cost growth. The case of the B1-B aircraft or the AMRAAM missile clearly support the findings of CBO on this point.

What is of concern about the CBO study is that it found that DOD's basic acquisition regulations favor concurrency by emphasizing the need to reduce the time it takes to acquire weapons. It is the Congress which has placed the constraints on acquisition policy favoring concurrency; the main constraint being the need for realistic and objective testing before production begins.

It is very important that we remember that current legislation permits production to start before testing is completed. Section 2366 of Title 10, of the United States Code, addresses the need for testing of major systems and munitions programs. The section as drafted would have required both operational and live fire testing before a major defense acquisition program for a conventional weapon system may proceed into the production phase. The draft allowed for production of articles required for testing. However, the draft bill was modified in Conference to provide that a covered weapon system "may not proceed beyond low-rate initial production" until testing is completed. This modification provides a loophole for weapons such as the Phoenix and AMRAAM missiles to be produced in large quantities before testing is completed, because they have not proceeded beyond low-rate initial production. I am sure that the Conferees did not intend that 2,110 Phoenix and 1,480 AMRAAM missiles be produced or that dual-sourced production lines be set up and running.

Congresswoman Boxer and I, as co-chairs of the Military Reform Caucus, have developed an amendment in response to this concern. This amendment requires production of the minimum quantity needed for initial operational test and evaluation. Furthermore, the amendment allows for establishment and maintenance of only a single production line. This is important for low volume and high cost items and to permit production verification. We also have proposed amendment language to ensure that simulations and computer modeling cannot be used as substitutes for actual operational tests. I have shared this amendment language with the Armed Services Committee leadership and hope that it will be included in the Committee mark-up of the Defense Authorization bill. Mr. Chairman, I ask that this amendment language be made a part of our hearing Record as well.

One last note needs to be made. DOD established the Test and Evaluation Committee (TEC) in September 1987 "to facilitate accomplishment of responsibilities and functions assigned to the Undersecretary of Defense for Acquisition in the test and evaluation area". By law, the Under Secretary's Office is responsible for development test and evaluation. According to the GAO General Counsel, the position of the Director, Operational Test and Evaluation as Chairman of the TEC appears to give the Director responsibility over developmental test and evaluation, which is forbidden by Title 10, Section 138, United States Code. This matter is clearly one of concern and needs to be closely reviewed.

Today we will hear how the testing programs Congress established in the Pentagon are being implemented. Our witnesses are uniquely qualified to address the main question of congressional intent versus reality and we look forward to our discussion. We should remember that these reforms were not accepted with open arms. It took 18 months before a Director of OT&E was appointed and report after report has shown that efforts to have realistic testing—both operational and live fire—have not been embraced wholeheartedly. What we wanted was that before a weapon is put into production that it be tested to determine if it will work as intended in the field and if it is as effective as proposed. Is that what we have? I look forward to the remarks of each of today's speakers.

Senator PRYOR. Thank you, Senator Roth. Senator Kohl.

OPENING STATEMENT OF SENATOR KOHL

Senator KOHL. Senator Pryor, let me begin by expressing my appreciation and admiration for the work that you have and this Committee have done in an effort to improve the way we test weapons. It has been a long fight, and after reviewing the testimony we will hear this morning, it is clear that the fight is not over.

Your staff, as they usually do, prepared some very useful and extensive briefing material for members of the Committee prior to this hearing. In that briefing material, they included a transcript of a hearing chaired by Senator Roth, which was held in June 1983. After reviewing that hearing record and the advance testimony we will hear this morning, I am afraid that we could have saved some money if we just changed the date and reprinted the 1983 transcript.

The plain truth, Mr. Chairman, is that despite the work of the Congress, despite the laws we have passed, and the hearings we have held, I am not sure that things have gotten much better. In fact, along with most members of this Committee, I recently signed a letter to Secretary Cheney from the Military Reform Caucus which called attention to some of the failures in the operational test and evaluation program.

The most depressing part of the letter was the following conclusion:

> In general the laws and regulations are sound, but what is needed is greater attention and commitment to realistic testing on the part of top Department of Defense decision and policy makers.

Mr. Chairman, I admire your tenacity. You have led a series of often lonely and always long fights for a number of important principles against excessive use of consultants, for a taxpayer's bill of rights, against biological weapons, and the list goes on. The fight for realistic weapons testing is not as lonely as some of those other battles, but it looks like it may take a lot longer.

In this hearing, we are going to go over some of the substantive problems in the OT&E program, and maybe we can make some changes in the structure of the program which will produce marginal improvements, but ultimately we are going to have to change attitudes in DOD and among contractors, and yes, even among members of Congress who want testing unless it affects the program they have an interest in.

I cannot say I look forward to receiving the testimony we will receive this morning, but I do look forward to working with you in an effort to find a way to fix this problem. Thank you, Mr. Chairman.

Senator **Pryor**. Thank you, Senator Kohl. And thank you for your nice remarks. Senator Stevens is here, but has informed me he has no statement, and you have to leave, I believe, at 10. We are very, very appreciative, Senator Stevens, of your being here this morning. Senator Levin.

OPENING STATEMENT OF SENATOR LEVIN

Senator **Levin**. Mr. Chairman, thank you for inviting me to join you this morning and to make a brief statement. First, I congratulate you, Mr. Chairman, on calling this hearing to look into a very critical issue. We depend on realistic, unbiased and independent testing of our defense systems to be sure that our troops will not be endangered by and our tax dollars will not be wasted on weapon systems that do not work properly.

About 3 years ago we created an independent Director of Operational Test and Evaluation to oversee weapons testing. Unfortunately, the General Accounting Office and others have reported that on a number of occasions that office has failed in its mission to ensure that realistic and unbiased testing occurred. One area of particular concern is that the OT&E has frequently relied on consultants to do its legwork rather than using its own personnel for oversight.

As you pointed out, Mr. Chairman, in your testimony before the House Armed Services Committee last fall, potential conflicts of interest in the activities of these consultants could undermine the integrity of the entire testing process. About 6 months ago, my Subcommittee staff began looking into the role that contractors play in the OT&E's oversight and evaluation work. It is a different Subcommittee as you well know because you have played an active role in that Subcommittee, Mr. Chairman, a different Subcommittee of this Governmental Affairs Committee, but we have worked very closely on issues of common concern.

In the course my Subcommittee's review, we learned that one contractor, BDM, Inc., of McLean, Virginia, performed a very significant part of the DOT&E's work. In order to determine whether potential conflicts existed with BDM, my staff reviewed the BDM monthly reports to the OT&E to determine which weapons systems BDM had worked on for OT&E.[1]

The staff then endeavored to identify whether BDM had worked on these same weapon systems for other DOD commands with different interests. To do this, we requested from the Federal Procurement Data Center a list of all BDM contracts with the Federal Government for the 5-year period ending with fiscal year 1988.

BDM turned out to have more than $800 million in contracts, most of it for research and development efforts and other studies for the Department of Defense. On the basis of this information, the staff identified a large number of contracts awarded to BDM by commands which are also responsible for weapon systems that BDM reviewed on behalf of OT&E. Having identified these contracts as a source of potential conflicts, we asked the military services to identify the specific weapon systems that were the subject of these contracts.

In this way, we were able to determine whether BDM assisted in overseeing the testing of the same weapon systems that it helped a program office to develop, and it turned out that they did. At the same time we also learned that BDM had contracts not only with OT&E and service program offices, but also with the Army and Air Force service test agencies. This is significant because OT&E is responsible for overseeing the work of these service test agencies.

If BDM was responsible for reviewing the same weapon systems for both OT&E and a service test agency, that would also be a potential conflict. So we looked at that issue, too. What we have found so far is, frankly, very disturbing. On five major defense systems, BDM was working for both OT&E and either the program office, the service test agency, or both.

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[1] See chart on p. 164.

BDM assisted OT&E on testing oversight on the MX missile even though it worked for the Air Force test agency and the program and contracting offices which are responsible for developing and for procuring that missile. In other words, the same consultant is playing a key role in advising and consulting the office which develops the missile, which purchases the missile, which is supposed to independently test the missile, and which is supposed to independently oversee the testing office for that same missile.

And we found a similar pattern, although not precisely the same, on SDIO, the B-1 bomber and the C-17 aircraft. Now my Subcommittee will be looking into these contracts further to determine the extent of the conflicts on these programs. On March 17, the OT&E awarded substantial contracts for two new companies, TRW and SAIC, to take over the work which had previously been performed by BDM.

So any conflicts, and I emphasize the words "any conflicts," that BDM may have had are now a matter of history, but it is important history because we can learn from it. BDM's successors hold substantial contracts with numerous defense agencies and commands other than the OT&E, that the OT&E is supposed to oversee, and therefore are susceptible to similar conflicts.

Mr. Chairman, I believe that it is incumbent upon the Department of Defense and the OT&E in particular to identify these potential conflicts in advance, if necessary, through the same kind of very laborious work that my staff has done and to avoid and eliminate those conflicts. We cannot afford to have independent and realistic operational testing of systems undermined by conflicts of the kind which I am afraid have existed.

We cannot have the same agency which is responsible for development having the same key advisor as the agency which is responsible for independently testing that weapon system being developed and having the same key advisor then advise the agency which is responsible to independently oversee the testing of that weapon system. My Subcommittee, Mr. Chairman, will continue to work with your Subcommittee to address this problem. All of us are deeply indebted to you, Senator Pryor, for your work and for your leadership in this area and for the hearings which you are scheduling.

Senator **Pryor**. Senator Levin, thank you. No one in the Senate has done more in this whole area of procurement and working to have systems and weapons that work than you, Senator Levin. We thank you.

There are two individuals who wanted to be at this hearing this morning. I am going to ask that their statements be placed at this point in the record, Congresswoman Barbara Boxer,[1] and Vice Adm. Robert Monroe, U.S. Navy Retired.[2] Neither was able to attend this morning.

Senator **Pryor**. We will call our first 2 witnesses, Rear Admiral Ed Carter III, Admiral Carter. Mr. Tony Battista, Tony. If you would take your seats. Rear Admiral Ed Carter III is one of the Nation's top authorities on operational testing. He was known as an extremely tough but fair weapons tester during his command of the Navy's Operational Test and Evaluation Force between 1982 and 1985. During that time, Admiral Carter tested over 300 weapon systems, and I am told that he refused to pass roughly 100 or about a third of these systems.

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[1] See p. 168.

[2] See p. 170.

He has also served as the Navy's Inspector General. He was the commander of the U.S. Navy's cruiser destroyer Group III.

Mr. Tony Battista is our second witness. This is not your first time, Tony, I might add, to appear before this Subcommittee. He was the senior staff member of the House Armed Services Committee Research and Development Subcommittee, where he earned a reputation as a tough weapons analyst and as a relentless opponent of bad weapons.

Hedrick Smith's book called "The Power Game" chronicles several of Mr. Battista's gallant efforts to ferret out phony test reports and faulty weapons, including the Maverick Missile, which for many of us, and especially me, was the big one that got away. We are pleased to have both of you here. We are going to try to limit your statements to 10 minutes each. I will ask Admiral Carter to speak first.

TESTIMONY OF REAR ADM. EDWARD W. CARTER III, U.S. NAVY, RETIRED, FORMER COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE, FORMER NAVAL INSPECTOR GENERAL

Admiral CARTER. Yes, sir. May I begin by saying I have applied to be Mr. Krings' relief. I tell you this not because it is going to affect what I say one iota, but just so you will understand that I am being up-front with you about that.

Senator PRYOR. Thank you, sir.

Admiral CARTER. I have not prepared a written statement. I would like very much just to give you, I hope, no more than 10 minutes of philosophizing. I commanded the Operational Test and Evaluation Force for 3 years, and that was without doubt the most challenging assignment that I ever had. It was the ultimate in professionalism because, you see, test and evaluation, operational test and evaluation has the purpose of determining the operational effectiveness and operational suitability of new systems; operational effectiveness meaning how well can it do what it is supposed to do when it is in its environment and operational suitability, meaning how well can it be maintained and supported by the system that was put in place to maintain and support it?

Testing is a small part of operational test and evaluation. In order to fully test the system, you would literally have to go to war, and as you know, people get killed in wars. People get killed in testing, but we like to keep that number to a very small number. You damage equipment in war, and you would like to keep that damage low. So you take a calculated risk when you lay out a test plan that you put people and equipment at risk but very minimal. And at the same time you understand that the evaluation process is a bridge between the gap of what you saw and the other side of the crevasse where you must judge about what you did not see.

Therein, you apply your professional judgment and your professional background to go from where you were to where you will be. Hence, the discussion about contractors being involved in operational test and evaluation has always puzzled me because contractors are not operational experts. They are not operators. They are contractors.

Contractors were kept at arm's length under my command of the Force, and I would reckon that they still are. I reported directly to the Chief of Naval Operations and directly to the Secretary of the Navy. There was nobody on either of their staffs empowered to intervene or to interfere with me although heaven knows some tried.

Given that independence, the attributes the people who are involved in conducting operational test and evaluation then must include objectivity, integrity, operational expertise, and a thick skin to deflect the arrows of those who would shoot the messenger. People used to ask whether I succeeded or failed in carrying the day. For example, I was told—one of my major, first major operational evaluation that I conducted was on the F/A-18 and I recommended against its production. The airplane was produced, and I was told that I lost that battle, and that is not true. I did not lose the battle. Those who were involved in operational test and evaluation never lose if they are listened to.

Production decisions can be made in spite of what the operational tester says or because of what he says. And under either case, the operational tester has succeeded. If it is made in ignorance of what he said, then he has failed. Then and only then has he lost. Operational test and evaluation results, I learned long ago, are not the sole considerations in whether to field a new system. A system can meet all of its requirements and not contribute one iota of warfighting capability to the fleet.

A system can fail to meet some of its requirements and still be light years ahead of anything that is available at the time. And warrant its production. Or there may well be other reasons which enable the CNO, the Secretary of the Navy, or in the case of DOT&E, the Secretary of Defense, to say we are going to build it anyway in spite of what you said.

If that were not the case then COMOPTEFOR could relieve the CNO and the Secretary of their production decisionmaking responsibility and DOT&E could similarly relieve the Secretary of Defense, basing the outcome solely on OT&E. The question about civilian support, contractor support, I find that question does not key with me. I do not understand it. I have never understood it. I never allowed anybody, not even those in uniform who were not directly a part of my force, to participate in any aspect of formal operational test and evaluation because they were not operators.

Now I guess that is about all I have to say as a preface.

Senator PRYOR. Admiral Carter, thank you for your statement. In a moment, we are going to have some questions. We will let Mr. Battista have the microphone at this time. Thank you very much, sir.

TESTIMONY OF ANTHONY R. BATTISTA, FORMER SENIOR STAFF, HOUSE COMMITTEE ON ARMED SERVICES, SUBCOMMITTEE ON RESEARCH AND DEVELOPMENT

Mr. **Battista**. Thank you very much, Senator, for inviting me to appear before your Subcommittee today. I have a prepared statement which I would like to submit for the record.[1]

Senator **Pryor**. Your statement will be placed in full in the record.

Mr. **Battista**. I am not going to read this whole statement but will summarize. Let me say at the outset that I agree with everything Admiral Carter has had to say about testing, and there has been no prior communication between us. I just found out yesterday that he was going to be a witness today.

I just completed my 30th year of experience in the defense and aerospace industry both in Government, in the academic world and in the private sector. I have seen quite a bit of development, weapon systems acquisition and testing, and I have got to say that the problem that you are confronted with today goes far beyond testing. On page 2 of my statement I summarize it rather concisely when I say the whole DOD acquisition process today is screwed up. So do not just blame the testers. You have got to go to the heart of the problem, the whole acquisition process.

Senator **Pryor**. Mr. Battista, on this point——

Mr. **Battista**. Sure.

Senator **Pryor**. I think it is very relevant—I do not want to interrupt and I am not going to take away from your 10 minutes—but what we have done here is take a microcosm——

Mr. **Battista**. Yes.

Senator **Pryor** [continuing]. Of the Department of Defense or the Federal Government to demonstrate how contracting out and the use of consultants affect the ultimate product to be produced. This is really the example that we are trying to make today. We are looking at operational testing, DOT&E. But I think it is truly an example of what is going on Governmentwide, not only in the Department of Defense. Pardon me for interrupting.

Mr. **Battista**. Yes, I agree with that. Let me say that subsequent to the passage or the enactment of Public Law 98-94, establishing the Office of Operational Test and Evaluation, I do not think we are any better off today than we were prior to the enactment of that bill. In January of 1986, Chairman Les Aspin asked me to address a Joint Hearing on the Procurement and Research and Development Subcommittee, and I gave them some observations at that time that while there were many good test programs conducted by honest, objective people in the DOD, each year the number of success oriented tests were increasing and the data was being misrepresented to the Congress.

I said at that time that you were being stonewalled on Public Law 98-94. We needed quality testing, not quantity testing, and quite frequently objective military and civilian testers became persona non grata. There were no rewards for their surfacing problems, but indeed punitive action taken. I have noticed that the services will not only misrepresent data to the Congress in terms of system's performance, that is making the data look good, in many cases they will make the data for a system that they do not desire look bad.

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[1] See p. 53 for Mr. Battista's prepared statement.

I can recall, for example, when the Air Force wanted to buy the low-level laser guided bomb, and we asked for a competitive with the Naval Weapons Center, China Lake developed Skipper. Skipper implemented a very simple gyro that extended the range and gave it quite a bit of capability. Well, we asked for side-by-side tests out at Egland Air Force Base, and the test results on Skipper were misrepresented because it looked every damn bit as good as the LLLGB.

There are other cases, the M–16 rifle, for example. Remember back in the Vietnam days, Representative Dick Ichond, chaired those hearings back then when the data was being misrepresented—the situation with the Ball powder and how the Army intentionally wanted the M–16 rifle to look bad.

I can recall the days of the AIM 4–D Falcon missile. Recall Falcon was supposed to be able to engage a 4–G maneuvering target. It was doubtful that it could that. So the few folks in the Air Force set up a test, and it was designed to demonstrate the ability of Falcon against a 4–G target. The upper management said, no, no, we are not going to do it that way. What we are going to do is we are going to have the drone pull a 4–G maneuver, and then we will fire the Falcon missile.

The conclusion was it engaged a 4–G maneuvering target. Quite true but when? It engaged the target when it was straight and level. So you did not get the exact data or the representation of the actual test. I said that the problem went beyond test and evaluation. I said the whole process is screwed up, and I really believe that. I think the problem got exacerbated with the advent of the last administration when we had to have this so-called military buildup.

I was in favor of a military buildup. We had fallen quite a bit behind the Russians in several areas of technology. What happened, though, was DOD put everything back on the plate, and consequently the number of research and development programs sky rocketed. For example, in 1976 there were 600 R&D projects. By 1986, there were 800. The R&D budget had grown from $13 billion to $42 billion.

You know what the significance of that is? For every dollar you spend today in R&D, you generate a mortgage of at least $10 in the next 5- to 10-year period. I will give you examples of that. We spent $3 billion developing an F–14. $30 billion as of 1986 in procurement. There is a 10-to-1 factor. The F–15, $3.1 billion, $33 billion in procurement, 11- to- 1. The M–1 tank ratio was almost 15- to- 1.

Now that shows you get a good return on investment. That is good. But you also have to pay attention to the number of different systems that you are developing. I contend, for example, in electronic warfare, we do not need half of what we have got out there. An F–15 has got an ALQ–135 jamming system. An F–14 has got an ALQ–126. An F–16, ASPJ and some ALQ–131 pods. The F–111, ALQ–137. You go down the list, and you come up with four dozen discrete electronic combat systems for our aircraft all going after the same threat. The SA-10 does not care if you are an F-14 or an F-15. The important thing is that you have got a radar warning receiver capability. You do not have to have 13 different ones, but we had 13 under development, I believe last year.

So we are doing too many things rather poorly instead of the things we should be doing in a qualitative manner. And by the way, when you couple that with the exorbitant Federal deficit we have got, when you couple that with the inability of Congress and the administration, any administration, to terminate programs, what you wind up doing is stretching everything out. You do not have enough to pay for everything you are doing so what gets screwed? Technology base and test and evaluation, other things, too.

They do not buy technical data packages so it is very tough to recompete something. But anyway, testing is one of the principal victims in the funding crunch. Procurement reform was absolutely necessary. I mean the Pentagon was running out of control back then. Something had to be done about the problem.

Unfortunately, I believe that the procurement reform, while each piece was well-intended, cumulatively has not only failed to achieve the desired effect, witness Operation Ill-Wind, but what also happened is we are undermining the technology and industrial base of this country which I think is rather serious.

I believe that Senator Levin was the author of the Procurement Integrity Act. I think that is the form that procurement reform should take. Make penalties very harsh. Put deterrence out there that make it untenable for a consultant or a contractor to want to overcharge the Government or to pass proprietary data.

Anyway, I was interviewed with Congressman Dickinson and Senator Bingaman by members of the Packard Commission, "Packard One Year Later," and remember it took almost—it took an act of the President to get the Packard Commission started. Congressman Dickinson, was the man who asked for that Commission to be formed—over the objection of Secretary Weinberger at the time.

But again, just like your testing legislation, what happened with Packard? We were worse off 1 year after Packard than we were prior to Packard because the Pentagon simply did not want to implement the recommendations of the Packard Commission. By the way, I did not get a single rebuttal from any member of the Commission when I made that statement in front of Senator Bingaman and Congressman Dickinson.

The only comment was by Jim Wolsey, who said, "Well, Tony, I think it is important that we establish the framework for the Packard Commission findings for the next administration." Well, so far I have not seen this Administration do anything positive about picking up on the recommendations of the Packard Commission. Some of that could be attributed to the delay in finding a Secretary of Defense.

Let me then say that we can fix the test and evaluation process provided we fix the whole acquisition process. And what we have got to do, Mr. Chairman, I summarize by saying that the first thing that you should require the services to do is to submit along with a proposal for a new weapon system an outline of what they are going to test. For example, they come to you and they say we need this missile because it is going to increase exchange ratios by 3 or 4 to 1. What you ought to do is require them to submit a list of those tests that will demonstrate that that missile will accomplish that and not just demonstrate a 1 on 1 engagement.

I will just amplify on what Admiral Carter said. One, as a defense consultant, there is no way I would accept a contract with DOT&E assuming they would offer me one. I am sure they would not. But I would have a direct conflict of interest. I am a defense consultant with several defense contractors. My consulting is principally in the area of technical evaluations, things of that nature, but it would be a clear conflict of interest for me to go to work for the Office of DOT&E. I would have to terminate all of my other contracts. And then I have a problem, assuming I did that, there is no way I can justify my role in the DOT&E area.

I am a consultant. I do not have a single bit of combat experience, and even if I did, I think it would be outdated. Operational tests should be restricted to the green-suiter, the blue-suiter. He or she is the best expert in the area of operational test. Not a consultant.

Senator PRYOR. Mr. Battista, I want to thank you for your statement. You have been eloquent, concise, and right on point. Following up on your last few sentences, you said you would not be qualified to be in operational testing. What about TRW, SAIC, Rand, or BDM? What about these major contractors and consulting firms? Are they qualified? Are they the right people to test our weapons?

Mr. BATTISTA. The right people to test your weapons are the people in blue suits and green suits, the military people. These are the folks who have to take that weapon into combat. I do not believe we are going to have contractors engaged in combat areas. I have no problem with an SAIC or BDM or a contractor like that providing a range support function or a maintenance function, but I would have a problem with a contractor who has a contract with the service developing a system and then having him involved in the operational test of that system. I do not endorse that at all.

Senator PRYOR. The General Accounting Office is going to state later that only 2 percent of DOT&E time is engaged in the field testing weapons. That indicates to me—maybe I am oversimplifying it—that 98 percent of the time that they are turning over the testing to the contractors and the consulting firms that make the weapons or that represent the weapons contractors. Am I right or wrong?

Mr. BATTISTA. That is correct. The people who ought to be testing these systems, as I said, are the ones who ought to be taking it to combat. You are not going to have any of these folks in a combat zone. They are not going to give you an objective evaluation because they do not have the training in tactics and doctrine that the green suiter or the blue suiter has.

Senator PRYOR. Mr. Battista, you were here when the Operational Testing Office was created, when Senator Roth, myself and others had this fight in 1982 and 1983. We saw the office sit vacant without a director for 18 months.

Mr. BATTISTA. That is correct.

Senator PRYOR. Finally the position was filled. I think that you were very aware from the very beginning as to what the intent that Senator Roth and I and others had for this legislation: independence.

Mr. **Battista**. Senator, I was doing the staff work on the House side in support of that legislation.

Senator **Pryor**. Correct. I remember that. What happened to it? What went wrong with the Office of Operational Testing?

Mr. **Battista**. Well, at the outset, it was sort of like the Senate ratifying a treaty, and having the Appropriations Committee not providing the requisite funds to implement that treaty. You created this office. You did not give them any money. You did not give them any people. And the Secretary of Defense did not want the position to begin with.

Senator **Pryor**. He did not want the office to begin with?

Mr. **Battista**. He did not want it to begin with. He did not want the Packard Commission.

Senator **Pryor**. The President did not want the office to begin with, I do not think.

Mr. **Battista**. That is correct.

Senator **Pryor**. We had no support from the——

Mr. **Battista**. You had no support.

Senator **Pryor**. So from the contracting world or the military people, in fact, we had opposition for its creation.

Mr. **Battista**. Oh, yes, very, very strong opposition. But let me say that I remember when we spent that year pressuring the Pentagon into filling that job, and it was obvious to me that your legislation was being stonewalled under the guise of, well, we are looking for the right individual. And when they found that individual and he came before the Committee, he advised that he had 140 weapon systems under his direction, and when asked how many people he had, I believe the response was 16. How in God's name——

Senator **Pryor**. They are up to 50 now. They said if they could just have 40 they would be over the hump, and now they have 50, and we are still in a very bad situation.

Mr. **Battista**. Well in my conclusions, Senator, I told you that I believe that that office needs fewer managers and more technical people.

Senator **Pryor**. Thank you.

I know Senator Roth will have questions. I would like to ask just one question to Admiral Carter. Admiral Carter, you stated, I guess it was sort of a disclaimer right at the beginning of your statement saying that you were interested in becoming the Director——

Admiral **Carter**. Yes, sir.

Senator **Pryor** [continuing]. Of the Office of Operational Testing. One, we appreciate your candor. Two, I wish you well. Three, do you have the support of the contracting community or the military powers that be?

Admiral **Carter**. That same question was asked me the other day. Who do I know in industry that would support me, and my answer was I do not know anybody in industry.

Senator **Pryor**. That qualifies you, I think, to a grand extent, Admiral Carter.

Admiral **Carter**. And within the Navy, those people—well, I think the most important support that I have from within the

Navy, most important to me, is my former immediate superior and commander, Admiral Jim Watkins, who is now Secretary of Energy, has communicated to me his full support for me in my attempt to get this job.

Insofar as the current military is concerned, those that I have talked to say, yes, but I have not talked to very many.

Senator PRYOR. What do you think about the Office of Test and Evaluation hiring all these consulting firms and defense contractors to test the weapons?

Admiral CARTER. I am opposed to it, flat out opposed. I understand perhaps the reason for it. I was in command of OPTEFOR when DOT&E was created. And my position at that time was DOT&E in order to be effective has got to be staffed by people who first and foremost are operational experts, which is to say I would recommend most strongly that he be adequately staffed with representatives, uniformed representatives from the Army, the Navy, the Air Force, and the Marine Corps. If that cannot be done, then call them back from the retired list.

I know many people who would come back with open arms. I discount the allegation that I heard in 1983 that you cannot trust active duty military people to tell the truth. I was surrounded by 1,500 people who laid their careers on the line every time they opened their mouth, and they never failed to speak and speak true.

Senator PRYOR. Admiral Carter, I think we are going to get along just fine. Senator Roth.

Senator ROTH. Thank you, Mr. Chairman. Let me ask you this question. The legislation that created the Operational Testing Office, do you find it sound in concept? Is it adequate? We do have one or two changes that we think need to be made, but I am talking overall. Is it a sound concept in the opinion of you gentlemen?

Admiral CARTER. I think it is a sound concept. I think it needs one bit of extra umph. And that is until—and maybe this has already happened—I do not know. I am perhaps out of touch. But my Army and Air Force and Marine Corps counterparts were not independent as I was independent. And I believe with all my heart that until the other service testers are independent as COMOPTEFOR was independent that you are going to lack something. And DOT&E itself, as I understand the law, is equally independent. I have to add, however, it is not enough to be authorized to be independent. You have got to exercise that independence, and I have observed a couple of people in my life who failed to step forth when that bugle call was sounded.

Senator ROTH. Well, you raise an interesting point. Of course, basically you cannot legislate——

Admiral CARTER. Guts.

Senator ROTH. What is that?

Admiral CARTER. Guts.

Senator ROTH. Guts. Yes, that is right. But my concern is how do you get the people who have the guts, the independence? Now you have rightfully said, or Mr. Battista said, that we need military who are going to operate. They are the ones that should be responsible for operational testing. One question that has arisen that of course if you put the military in charge, their promotions are handled by that service so that you can conceivably have a conflict of interest. How do you take care of that problem?

Admiral **Carter**. Let me try it this way, Senator Roth. I had in the 3 years and 2 days that I was in command of the Operational Test and Evaluation Force, I had a permanent cadre in the Force of some 1,500 officers and men. In the course of 3 years, we had two complete turnovers so that that meant that I looked at something in the neighborhood of 4,500 people over 3 years. In only two instances did I find a person with his eye on the promotion board in the way in which he conducted himself and both of those people were fired.

So I trust military people. I trust them with my life. I have trusted them with my life for 40 years literally. They respond to the call. And if they understand that they are there to tell the truth, that their job is to be objective, unbiased, and truth tellers, they are not going to let you down.

Senator **Roth**. I appreciate——

Mr. **Battista**. I have got a slight disagreement with Admiral Carter on that point. I remember the first hearing we had with Mr. Krings when he came over and he brought his military advisor over. And I said who is going to write his fitness report, and Mr. Krings said I will. And I said where does he go after he leaves you, and he said, well back to the Air Force. And I cannot help but believe the corporate memory is very long.

One of my difficulties right now, and I am not just speaking as an observer now. I look at Mr. Krings' organizational chart. The head of Army programs is Army. The head of Air Force programs is Air Force. The head of Navy programs is Navy. I would do it a little differently. I would have the Navy guy in charge of the Air Force program. So that when it comes time for him to return to that service and get a fitness report written, he isn't going to have that problem.

I like to believe that everybody is honest at the outset, but I cannot help but believe that there have been pressures over the years. Well, you know, regardless of your position on the Bradley, look at what happened to Colonel Burton, OK. Perhaps he did not handle the situation properly. I do not know what all the intricacies are, but he tried to do an objective job.

So I think it is important that we try to remove as many obstacles as possible, and I would say in the Office of Independent Test and Evaluation, or Operational Test and Evaluation, do not put a person in charge of that service program who is a member of that service.

Admiral **Carter**. I would disagree violently with that.

Mr. **Battista**. We rarely agree, by the way.

Admiral **Carter**. And the reason that I would is because we have both made the point that what we are looking for first and foremost in those people who are involved in operational test and evaluation are operators. And I would say operators in that particular form of warfare. My statement about the integrity of people who are charged with telling the truth did not mean that the institution that they represent will not chop their heads off.

But my observation was that those who were so charged did so in spite of the fact that they might get their heads chopped off from me down to the lowest seaman in the force.

Mr. **Battista**. Well, I think that, you know, frankly it is the man who signs the report. That is where the buck stops, and you could have the operational user community in the Air Force actually conducting the test. But that man who is going to sign the final report, I think, would be far better served by having a representative from another service sign that.

Senator **Roth**. Well, basically it does take guts whoever it is, and of course, the thing that bothers me, and I think we have good legislation on the books, but what we need from the very top is the will to exercise that responsibility in a responsible manner. And Admiral, I think you had the guts to do it, and that probably reflected throughout your organization.

What has concerned me is that there has not been the will to make this operational testing independent, and it does finally come down to people. I do not care what we do up here if there is not the will to make it work, it is not going to work. So that it is important that we get—and I have to agree that there are situations, Admiral, where the individual has the strength, the guts, the leadership, the will, to do what is necessary. But that is what we really have found lacking, as I think you, Mr. Battista, brought out. There has been sort of this conflict between Congress and the Department.

Bill Dickinson and I both went over to the Secretary of Defense asking that he create the Packard, and I think that is a very important movement forward. Let me ask, you are you familiar with the recommendations of the Packard Commission?

Mr. **Battista**. Pretty much so, yes. I do not think anything has been amended subsequent to a year and a half ago, but I think that interview that I had with Senator Bingaman and Mr. Dickinson took place about 2½ years ago. But I mean on prototyping, on the reorganization, et cetera, I think I recall a lot of those provisions, yes, sir.

Senator **Roth**. If I understand your testimony, in part some of the problem is here in Congress. We have not appropriated enough money; is that what you are saying?

Mr. **Battista**. Well, as far as Director of Operational Tests, what you did was you enacted, or you passed legislation that basically would create the office. But then there was no appropriation for funding for that office. In other words, we just created it, and you were relying on the services to kick in a fair share for testing, and they were not about to do that. They did not want to do that to begin with.

And you had a Secretary of Defense who did not want the thing to begin with, and so, you know——

Senator **Roth**. All we are seeking is independent operational testing to ensure that the men and women in the service have the kind of weapons and equipment that is necessary to protect their lives. Now why is that something that is controversial? I have to admit I do not understand that.

Mr. **Battista**. Senator, I do not understand the whole workings of the Pentagon over the last 8 years, and this is a non-partisan comment. I worked for both the majority and the minority side. We were non-partisan over there.

You have parallel monologues going on. They spend more time trying to circumvent your language than they do trying to implement your language. That is the difficulty. We all have the same objective. I do not understand a mentality that says we should not do independent testing to make darn sure we put the best weapon in the hands of the user.

And you know the list goes on. The Gama Goat. I remember when the Army testified that it met 90 percent of the Army's standards. Chairman Price said to me when I was going to reforger exercise, Tony, look into it. And guess what I found? The maintenance sergeant said that is the worst expletive-deleted vehicle I have seen in my 17 years in the Army. The 3-star said line them up at the border and give them over to the Warsaw Pact countries.

You had this vast difference in what this vehicle did. The fact of the matter is it did not work. It has never worked. I do not know why we seem to want to protect these systems that are not doing the job. You know what is more important? You have got a host of weapon systems this year, next year and the year after that do not do what they were advertised to do.

Does that mean that they should be terminated? Not necessarily. I will give you one example. There is a system that was supposed to punch a 6-inch hole in a platform. It does not work do it so they changed the requirement, scaled it down a little bit. They could not demonstrate that. So they scaled it down again. So now what they have done is they have adjusted the requirement to meet the test result.

Now I would like to know whether or not that thing is going to work or not. It could very well be with the lesser lethality it is still worth buying. But you will never know that. I will never know that. And what is a shame about this whole thing is that the poor guy in the field thinks he is getting something that works, and it does not work the way he expects.

Senator **Roth**. Well, as I say, the thing that bothers me is a proposition that everybody has to be in favor and sincere to provide security for this country. It is not a partisan matter. Dave Pryor, the chairman, and myself have worked consistently. I was chairman a few years ago. I have been working on this kind of problem under the Carter administration as well as under the Reagan administration.

I think our Chief of Staff, our Chairman of the Joint Chiefs of Staff is one of the finest people we have in Government. I do not understand what it is, a simple proposition like this cannot be effective. It is something that we should all want, and the thing I admire from the little I know about you, Admiral, is that you had the leadership and the guts, but how do we make this apparent throughout the system?

Admiral **Carter**. With the—I think to answer your question in amplification of what Tony has said, one of the things that needs to be done—my opinion—is the Army and the Air Force need to enjoy the same authorized independence that the Navy enjoys. There should not be this relationship which subordinates the operational tester to the Materiel Command. That is prostitution, and that is wrong.

But that needs to be established first. And then it needs to be exercised, and then DOT&E's job, as you wrote the legislation, says look at that, see if it is independent, see if it is being exercised, see if it is being done.

Does it test what it is supposed to test? Does it address all of the issues? For example, let me pull this off the wall. We are going to do an operational test and evaluation of a torpedo that has a 60 mile range capability against a submarine. Well, the first question you want to ask is do I have means of detecting a submarine at 60 miles because if I do not, I do not need the torpedo.

That is a relevant question, but it is an operator's question; an independent operator's question. It is one that does not fold up and go away when the torpedo builder says "that is not my problem. All I am charged to do is build a torpedo."

Mr. **Battista**. Senator, I did a tour of duty in the Pentagon, too, in my years in the executive branch. Let me say that there is a perception over there, an erroneous perception, that if you tell Congress what is wrong with the system they are going to kill it. That is the farthest thing from the truth. In fact, if you tell the truth, you do not have to worry about what you said the last time, and I think you will find a very receptive audience when you say I have got a problem here. Our field troops need this system, and we are having difficulty with it. Would you help us? And I think if you can create an environment whereby you say, look, if you tell us what is wrong, it does not necessarily mean we are going to kill it. That may help.

Secondly, I think you have probably one of the brightest people in the Congress over there as Secretary of Defense right now. He has extensive experience in both branches of Government. I cannot help but believe that you cannot sit down with Dick Cheney and let him know what the problems are, and his not responding. I do not think that is going to happen at all. And I think you ought to do that. I think you ought to sit down the Secretary, and I worked with him for 4 years indirectly. I was the interface with the Permanent Select Committee on Intelligence. He is very capable. He is capable of understanding engineering data. I have watched him on our USR-71 squadrons programs and things like that. He knows where it is at, and I think you might want to do that as a first step.

Senator **Roth**. We have written him, and I think you make an excellent suggestion, and I think the Chairman and I may just follow your advice. Thank you, Mr. Chairman.

Senator **Pryor**. Thank you, Senator Roth. We want to thank both of our witnesses this morning, and we will excuse you. You have made a great contribution, and we very much appreciate your testimony and your ideas.

Our second panel is Frank Conahan, Director of National Security, International Affairs Division of the GAO, and Derek Vander Schaaf, Deputy Inspector General, Department of Defense. We welcome both of you this morning. Once again we are going to try to hold these statements to 10 minutes or shorter. Your full statement will be placed in the record. We thank you both for coming.

Mr. Conahan, you may proceed.

TESTIMONY OF FRANK C. CONAHAN, ASSISTANT COMPTROLLER GENERAL, NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION, GENERAL ACCOUNTING OFFICE

Mr. CONAHAN. Thank you, Mr. Chairman. We appreciate the opportunity to be here. I do have a fairly complete statement which I understand will be made part of the record,[1] and I can summarize. Our earlier witnesses in their dialogue with you and other members of the Subcommittee talked about the long-standing nature of these problems and unfortunately that has been the case. Since 1970 we have issued over 50 reports dealing with the adequacy of operational testing and evaluation to demonstrate the capability of weapon systems to perform their intended missions.

Summarizing those 50 reports, testing has not been comprehensive. It has not been realistic, and it has not been rigorous by and uniformly conducted with respect to the major systems that have gone through that process. Furthermore, there has not been sufficient oversight of the testing and evaluation function by top management in DOD. I think the points made earlier were not talking just about the Director of the Office of Operational Test and Evaluation, but were talking about people who are involved in the overall procurement and acquisition process.

Our work has shown that in the latter stages of program development, weapons historically have had cost growth, schedule slippage, and performance shortfalls. We feel that sound and independent testing is needed to avoid costly redesign and modification after production or deployment. Similarly, we cannot afford to invest the large sums and then kill programs after we put $1 billion or $2 billion into them such as the Aquila and the Sergeant York Air Defense Gun respectively.

It has been mentioned here that there are trade offs between adequate operational testing and the need to field the weapon. That process will continue. We will not always expect to see a system delayed or terminated because of poor operational testing results. What we think is really important, however, is that the decisionmakers absolutely know what they are getting before they make decisions to go forward with production.

Let me first talk briefly about inadequate oversight and reporting. In March 1987, we evaluated DOT&E's effectiveness. We reported on its activities. We think that it had made some contributions, particularly in the planning area, but we felt that there were some rather significant deficiencies. One, it appeared to be making only limited numbers of actual on-site observations of operational tests. That was referred to earlier by you, Mr. Chairman.

Its analysis of operational testing was primarily based on military service test reports with little assessment of the actual test results, and it had not provided policy or procedural guidance or maintained reliable records on some of its principal activities. We have recently done some follow-up work to see what corrective action was taken. We do not think that they are moving as quickly as they need to correct those problems.

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[1] See p. 60.

We issued another report in July of last year, which confirmed many of the longstanding testing problems themselves. We reported that there were significant problems and limitations in planning, execution, realism, analysis, and reporting of OT&E by the service operational test agencies, and we found deficiencies in the reporting to the Congress by the Office of Operational Test and Evaluation.

Moving on quickly to realistic testing and test resources, as early as 1975 we reported on the lack of realistic targets. Other reports have stressed the need for improved realism in testing and more representative test resources. In 1983 in the hearings that you referred to earlier, Mr. Chairman, we reported on these problems. We talked in terms of both the inadequacy of test resources, targets and so on.

In December 1986, we looked at this matter again, and we examined six deployed systems and found among other things the test resources were often not available or not adequate. In March 1988, we reported that we had found the same thing with respect to some Navy programs. OSD has undertaken some initiatives to improve in this area. You referred to two initiatives earlier today, the Capability Improvement Program as well as the Test and Evaluation Committee. We are doing some work at the request of other committees of the Congress to assess those two programs. We expect that the results will be available later this summer.

Let me say a word about the impact of concurrency on production decisions. I think that concurrency has been a significant problem, particularly during this decade.

We have seen an increase in the concurrency of our acquisition programs, development and production being done side by side. I think the B-1 bomber is an excellent example. We let the development contracts and the production contracts on the same day for it. Development testing and operational testing has been combined and merged.

It is kind of difficult to get independent operational testing out of that kind of an operation. There are other programs which have the same characteristics, and they are included in my statement.

Moving on to the need to maintain independence in operational test and evaluation, I would like to echo the comments that were made earlier on that. I think that independence is essential. I think that we need two kinds of independence. I think that the testing itself which is done by the services needs to be done independently from the program offices and others who have an interest in fielding those systems, and I think that the oversight in monitoring which is the responsibility of the Director of OT&E and the Office of the Secretary of Defense needs also to be independent of that process.

That goes into the whole question as to whether development testing and operational testing should be merged. We believe they should not. Involvement in developing testing by the operational test organizations gets you too close to the development of the weapon itself. We think that the office of the Director of OT&E should be as you intended it to be—an independent overseer of operational testing.

Let me just move into a discussion briefly of something which we see which is fairly new, something called early operational assessments. We did a review recently of some 20 Navy systems. Ten went into full-scale development and 10 that went into low-rate initial production. We found no operational testing in connection with the 10 that went into full-scale development. And maybe that was expected because it is kind of difficult to have production representative prototypes for operational testing at that point in time even though the DOD guidance calls for it.

But when you move on to low-rate initial production it is a different matter. There we believe that you need to have prototype items in order to operationally test them. We found that in only 3 of the 10 cases did they have them, but as an alternative to doing operational testing, they did something that is now called early operational assessments. This relies on development testing. It relies on simulations. It relies on paper exercises.

The Secretary endorsed that concept, I believe, in about September 1987. Our concern is that it blurs the distinction between operational assessments and actual operational testing. I think that we all need to give serious consideration to any further moves on the part of the Department of Defense to substitute something like operational assessments for real operational testing.

I think, Mr. Chairman, that is sufficient for you to get into whatever questions you might have.

Senator PRYOR. We are very grateful to you, Mr. Conahan, and we are grateful to the staff at the General Accounting Office who have assisted in this very splendid report. I may have a couple of questions in just a moment.

Mr. Vander Schaaf, thank you for appearing.

TESTIMONY OF DEREK J. VANDER SCHAAF, DEPUTY INSPECTOR GENERAL, DEPARTMENT OF DEFENSE [1]

Mr. VANDER SCHAAF. Thank you, Senator Pryor. It is a pleasure to be here again. You and I go back a long way on some of these issues.

Senator PRYOR. Yes. I do not know if we are making any progress.

Mr. VANDER SCHAAF. Well, we are making progress. It is not quite as dark as it is often portrayed. You and I have worked on the issue of consultants back in the 1970's when I was with the House Appropriation's staff. I was one of the witnesses in the room across the hall there—in 1983 when we testified strongly in support of the creation of an independent Office of Test and Evaluation. I was at both hearings. It is interesting how you took these two issues and put them together in your opening statement. You did so very appropriately, I might add.

Senator PRYOR. Thank you.

Mr. VANDER SCHAAF. I thought the statement was extremely well done. One of the key points I want to make is to challenge the idea there is not enough money to hire the people to create an independent office of OT&E, and get the job done inside the Government without having to use outside consultants.

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[1] See p. 72 for Mr. Vander Schaaf's prepared statement.

You had charts displayed a moment ago showing major defense consultants. Well, the Government just negotiated a so-called omnibus test support contract with two of those particular contractors listed.

Senator **Pryor**. TRW, SAIC.

Mr. **Vander Schaaf**. Yes, that is right, sir. Those contracts are expected to run for 5 years. They are level of effort contracts providing generalized support, much of which I think is of a governmental nature. They cost about $85 to $90 million a year.

It is my belief that you can over a period of time, not necessarily tomorrow—peel some of that work off. It can be brought in-house, particularly those aspects of the work which are governmental in nature. I am sure that both your staff, the General Accounting Office and my organization have all pointed to aspects where much of the work is not only governmental in nature. It gets very close to what I call personal service contracting, which is by law illegal.

The opportunities to make some changes are clearly prevalent. Let me go back to the experience of my own office. We started off with 16 criminal investigators about the same time the Director of Test and Evaluation got started. I believe he also had 16 people. Since that time we have experienced rapid growth. When it comes to criminal investigation of procurement fraud, we are the best in the business.

For instance, from World War II until 1984 there was no indictment of a major defense contractor. Since 1984 there have been 22 indictments of major defense contractors.

In regard to IG, DOD activities you simply do not turn criminal investigative functions over to contract, you do not turn over audit functions to contract, and I do not think you should turn independent OT&E kind of functions over to contract.

Those are items that are governmental in nature and they need Government employees to avoid the conflicts and the mishmash that goes on.

Enough said on that. I think there are some other bigger policy issues that I want to bring to your attention this morning that are working their way through the processes in the Pentagon. Policy issues we need some help in resolving as we go along.

On another matter, I have a brief piece in my opening statement about an investigation that we are conducting involving one of the firms you had displayed on the board. I understand you are interested in pursuing that further.

Senator **Pryor**. Yes.

Mr. **Vander Schaaf**. We can do that later if you desire to do so.

Senator **Pryor**. Is that C3P?

Mr. **Vander Schaaf**. It is C3P.

Senator **Pryor**. Yes, I have a couple of questions.

Mr. **Vander Schaaf**. It is a relatively small contractor involving three or four contractual actions with a price tag of $6.8 million. We have accumulated, I should say, a bucketful of allegations involving contracting process and a lot of internal fingerpointing. I do not think I should delve into the case in any more depth, especially not at this time.

But what I did want to bring to your attention this morning, and emphasize what Mr. Conahan has said here, is that we have some OT&E policy issues which need to be addressed. Clearly, they are the kinds of issues on which Congress and the administration have to work together to resolve. The first issue is to clarify what constitutes low-rate production. The second issue is to clarify what constitutes adequate operational testing.

Those two issues are critical and they keep coming up as we do our work. Since we have not fully defined either low-rate production or full rate production, we look at weapon systems that are going through their development and production phases and have difficulty in determining whether or not the weapon is really ready to go on to the next phase.

Now, as long as the weapon stays in the low-rate production category, it does not need to pass an operational test or evaluation. I have two examples that explore the problem of defining low-rate versus full-rate production in my statement.

All too often with these weapon systems, it appears that the sponsors of the system are really committing the Government to the full weapon system even though they have not passed the operational test that the law requires under Title 10, Section 138. My audit staff, of course, keeps going back with these issues and saying wait a minute, you have to meet requirements in Title 10.

I use the SINCGARS radio and the C-17 aircraft as examples in my statement, but I could also have used the SSN-21, the AMRAAM missile, an ultra-high frequency communication satellite that the Navy is about to deploy, the T-45 trainer aircraft of the Navy's, the TAGO surveillance ship, and the Mark-50 Torpedo, to name a few where we have issued audit reports or will issue audit reports in the very near future that deal with this matter of low-rate production, and what it constitutes and what constitutes adequate testing.

For example, in the case of a SINCGARS radio, the Army wanted to go to a production rate of some 1,375 which was the maximum production rate that the radio would ever reach and call it low-rate production so they could go ahead and award the contracts. Well, how can low rate and the maximum rate be the same thing? We are working on that issue in the building now, but it is the kind of issue we face on a regular basis.

So we believe that implementation of the program office request for the SINCGARS and the C-17 would have resulted in circumvention of the intent of Title 10, Section 138. I believe there is an urgent need to get ourselves in a position where we have some guidelines to use in evaluating these programs in the future, and what constitutes low-rate production and what does not.

That is explained in a paragraph on page 8 of my statement, and I hope you take a look at that. The other issue is what constitutes adequate testing? Here the issue is whether the use of operational assessments, something that Mr. Conahan mentioned, instead of operational tests constitute adequate testing?

When a production representative prototype is not available for operational testing, the results of developmental component testing, computer simulations, paper analysis, analysis of a systems requirement, and engineering proposals are used instead.

Operational assessments are usually used at the completion of the full-scale development stage in the acquisition cycle. The operational assessment provides the Office of the Secretary of Defense a means to assess the effectiveness of the system so management can make a more informed decision. Thus, the use of operational assessment should be viewed as a positive and useful step in the decision-making process, and however big the weapons system may be, the public law requires an operational test. It does not recognize or say anything about the use of an operational assessment.

My statement on pages 10 and 11 gives you examples of this with the SSN-21 submarine and the SINCGARS. Now we recognize that in certain high-cost very longtime production programs in which you produce a very few articles, such as a submarine or a satellite, it may be necessary to amend this law.

The difficulty is amending this law without opening it to such an extent that people will try to abuse the law. Right now we do have troubles trying to enforce Section 138.

I look at our role as a policeman, if you will, who stands at the door and says this program really did not meet the requirements of the law. It has not been approved. It does not have a certification from the Director of Operational Test and Evaluation. Yet it looks to us, Mr. Program Manager, that you are really asking a full production commitment.

I address a third problem briefly in the last pages of my statement. It has to do with mission analysis and something called a System Threat Assessment Report for major system acquisitions. Each major system gets what we call a system threat assessment in order to understand what the threat is that the system goes against. As it goes through its cycle, it should also get a new mission analysis to determine if the system can, in fact, meet that threat. Current regulations require the System Threat Assesment Report to be updated but not the mission analysis.

So we get a situation where we may not know if the weapon system meets the latest assessments of the threat, and we have that situation with the SSN-21 submarine and are working with the Navy and DOD to rectify that. I see that also as a potential problem that has to be addressed in this operational test and evaluation area.

With that, I will stop my remarks and try to answer your questions.

Senator PRYOR. Thank you, Mr. Vander Schaaf.

One or two quick questions. How do we make the Office of Operational Testing and Evaluation independent? How do we have independent testing of our weapons?

Mr. VANDER SCHAAF. Well, first, I would place more reliance upon Government employees in this area. I think you can hire Government employees. That is one. There are a number of others.

Senator PRYOR. What is your jurisdiction? I know you are involved in fraud cases within DOD. What if a blatant conflict of interest comes on the radar screen, and you see that? It does not take a rocket scientist to figure it out. Do you have jurisdiction there to go in and slap some hands?

Mr. VANDER SCHAAF. Oh, certainly.

Senator PRYOR. Did you see, for example, DOT&E is hiring BDM, TRW, and all these firms?

Mr. VANDER SCHAAF. I knew that they were going into a contract phase. I believe at the point we did some work with one of the firms, the last firm on the chart, C3P——

Senator PRYOR. I am going to ask you about that in just a moment.

Mr. VANDER SCHAAF. We were also aware that they were in the process by this point of negotiating a contract for follow-on test support. They had, I believe, five or six companies competing for that contract. Eventually TRW and SAIC won that contract. There are, of course, reasonable and appropriate functions for contractors to support.

Senator PRYOR. I know that.

Mr. VANDER SCHAAF. And at this point in time, they are, in effect, stuck with having to use contractors for this. Had we started in 1985 to wean ourselves away from this, we would be further along. I do not believe, however, that we have really attempted to wean ourselves away.

Senator PRYOR. We have not weaned away at all. In fact, we are hiring more contractors and spending more contract dollars than ever before.

Mr. VANDER SCHAAF. That is right.

Senator PRYOR. At the same time we have doubled or tripled the number of the people in the testing office, TRW and SAIC is working with all these companies. Rand is not a manufacturer. But they are a consultant to many agencies of the United States Government. Here they are monitoring testing. TRW and SAIC work on hundreds of millions of procurement contracts. They are out there monitoring the tests of these weapons.

Does this worry you?

Mr. VANDER SCHAAF. Yes.

Senator PRYOR. What am I missing here? Am I the only one that is incensed about this? What am I missing? Be honest with me. Am I supposed to be as angry as I am?

Mr. VANDER SCHAAF. Well, I do not know how angry you ought to be, sir. I will leave that to you. But obviously this situation ought to change. I have testified to that not only in OT&E. We have a situation where DOD has a huge reliance on consultants who may have, in fact, conflicts with other programs and organizations in the Department of Defense. There is no doubt about that in my mind.

Now the issue is, how do we start weaning ourselves away. The money to do so is available, and that is the point I tried to make earlier. To argue that you do not have the money to do this, is foolish. You have to set some money aside, and the Congress has to be willing to give the Director of OT&E enough funds to go and build the force he needs to conduct these tests on his own.

Senator PRYOR. Well, let me ask Mr. Conahan a question. What do you think the bottom line is when we have no real independent testing of weapons, and we do not? These contractors and consultants are testing these weapons. What is the consequence of all this, Mr. Conahan?

Mr. **Conahan**. I think the problem, as Mr. Vander Schaaf said, goes beyond the testing of weapons, but it does include the testing of weapons. I think the Department of Defense has gotten to the point where it relies far too heavily on consultants and contractors to carry out functions that employees of the Government should be carrying out so as to assure integrity of the function and the absence of even the appearance of conflict of interest.

There are difficulties in determining what people are doing precisely who are under contract to the Department of Defense. Indeed, there is no agreement on the definition of a consultant. So it is difficult to say what we have in terms of consultants working for the Department of Defense. These people on the board over here are doing functions that were given to the Office of the Director of Operational Test and Evaluation by the law that you people enacted in 1983. They are responsible for providing guidance on behalf of the Secretary of Defense to assure independent and adequate operational testing.

They are required to monitor that testing, and they are required to report to the Congress before systems move into production. Consultants are involved in some of that kind of work. I do not know the extent to which they are doing it versus the staff of the Director of Operational Test and Evaluation. I do not think that work has been done by either the Inspector General or by us. I believe that he is getting into that.

Mr. **Vander Schaaf**. Yes. We have an inspection ready to get under way. An inspection as opposed to an investigation or an audit, and there are slight differences. We are getting into that issue in 1990 with the whole operational test and evaluation world. We will want to look at the entire management function of that kind of operation within the Department of Defense. We will look at such things as the reliance and use of consultants and get a lot of detail in regards to the extent and role consultants have played.

Senator **Pryor**. I have been hearing that for 10 years.

Mr. **Vander Schaaf**. Well, no, I do not think it has ever been done. This organization has not been around for 10 years. This will get into details of how they use consultants.

Senator **Pryor**. Mr. Vander Schaaf, it is not going to happen unless there is a will to make it happen. And the will to make it happen is not going to be there unless the will and commitment is at the top. You know this, and I know that you are on the right track and you get frustrated sometimes. But it is never going to change unless there is a change at the top that says it is going to change. I think that is where we are.

Let me ask you a question about C3P. Tell us about C3P. Who are they? How did they get up here at the feeding trough?

Mr. **Vander Schaaf**. I am not sure how they got there. I have some idea though. They were a small firm dealing in antique aircraft. They were listed and advertised in what is called the "yellow sheet" for purchases of aircraft that is circulated in the aircraft business.

Somehow they had gained access to a source for foreign aircraft, and in fact, told the Government that they could deliver those aircraft to the Government at a good price. From what I understand, they got a lower price than the Government had been paying for those aircraft, but I have not gone out to audit what we paid for similar things in the past.

Senator **Pryor**. What vintage were these aircraft, especially the MIGs?

Mr. **Vander Schaaf**. Some of them, the MIGs, were Korean War vintage MIGs. I believe we ended up buying some 15s and some 17s. We may have bought one or two 19s in there as well. I do not remember the exact details. But that does not mean necessarily, Senator, that they could not be used for a good purpose. At the price they were paying for using them as drones or for other target vehicles, it was probably not any more expensive than trying to convert a U.S. aircraft to do that function.

So we did not look at that aspect of it. What we looked at is how the contract was awarded.

Senator **Pryor**. Yes. How was the contract awarded?

Mr. **Vander Schaaf**. Four contracts were awarded to this company. As I said on page 2 of my statement, there were a number of mistakes made in that process. Last night, however, I finally saw the reply came back from some of the people involved with respect to our original report on the matter. I read the reply very briefly this morning, but I did not have a chance to carefully analyze it. But it looked like a lot of finger pointing. It was the Nazi Nürnberg defense: "I was ordered to do it from on high." That is why "we" did such things as not make a full determination of the contractor's financial ability. That is why we agreed to award a classified contract, but the contractor had not been cleared for classified data.

Well, the answer I saw in response to that said, we gave the contractor a declassified version of his own contract. Frankly, how do you give a contractor who has signed a contract with you a declassified version? He has to have an exact copy of the contract he signed with you. So there were a lot of problems. This was done in a hurry in 1988, those four different contracts. They totaled about $8 million.

Senator **Pryor**. $8 million spent with a contractor who had not been cleared for highly classified matters but who was dealing in a highly classified area; is this correct?

Mr. **Vander Schaaf**. The president of the firm had a security clearance, but the firm itself did not have a clearance. Nor did he have a clearance for special access type programs.

Senator **Pryor**. Was the Director of Test and Evaluation, DOT&E, involved in issuing the contract to C3P?

Mr. **Vander Schaaf**. Yes, they were. Afterwards, as I say, a lot of finger pointing started, and it was very difficult for us to determine the role of who did what or who ordered what. But we are doing a lot more work in this area. I would prefer not to talk about the future work to be done.

I will, however, give some historical context. What we had seen is that the contracting organization, in this case DTESA, which is a support activity for the Director of Operational Test and Evaluation, had made some mistakes in their contracting procedures. They said they were in a rush to get this done, and had to do it quickly.

Now I do not need excuses as to why they made a mistake. The head of that organization was also the head of the contracting authority. He had—I think the term is HCA, head contracting authority—for that organization. He has a responsibility to tell his supervisors or anybody else if they are violating the law or the FAR or the DAR. So if Mr. Krings, or one of his colonels or somebody else told him to do something that was wrong or illegal, that individual who awarded those contracts as the HCA, had a responsibility not to do those things.

He certainly should have documented the fact that he disagreed and did not intend to do that. We could not, however, find such documentation.

Senator PRYOR. As I understand it, DTESA was created, I think, 2 or maybe 3 years ago.

Mr. VANDER SCHAAF. Something like that.

Senator PRYOR. DTESA is a contracting arm of or for DOT&E.

Mr. VANDER SCHAAF. And some other claimants are involved also which I can't——

Senator PRYOR. DTESA also represents the developmental arena. DTESA is the contracting officials for the developers and the researchers. Now we have the same organization sitting out there in Albuquerque contracting with all of these people, and it is an incestuous relationship. They are doing the developmental contracting and they are doing the operational contracting, which is subverting the will of the Congress.

Mr. VANDER SCHAAF. I am not so concerned about DTESA doing that themselves, but I am concerned about the two contractors.

Senator PRYOR. Right.

Mr. VANDER SCHAAF. Let me get into that in just a minute.

Senator PRYOR. We are going to have to conclude this panel in about 60 seconds.

Mr. VANDER SCHAAF. We only have a certain amount of dollars to devote to this program. We only have a limited amount of ranges, test equipment, et cetera. The developmental community has to a large extent had to share that test gear with the operational community. I do not think there is any doubt about that. There is a role for an agency to play in allocating those resources, scheduling that and doing that sort of thing.

On the other hand, and this is more important, when we went with these two contractors it was to ensure that we had competition as we allocated tasks over the next several years. Under the way we were doing business in the past, the single contractor, BDM, had the contract. As tasks were allocated, they got the price of the task, and how much to do in a sole source environment within the scope of the general contract.

Now the difficulty occurs when you want to have both contractors do DT&E and OT&E. If one does DT&E and you really want to keep them out of the OT&E, as you should, then you have eliminated your ability to get competition on the task orders for the T&E work as it comes down later on, assuming of course the system they did the DT&E work on eventually reaches OT&E.

Senator PRYOR. Now, are you aware that warrants were served on C3P?

Mr. VANDER SCHAAF. Yes. I am aware of that.

Senator **Pryor**. In Texas?

Mr. **Vander Schaaf**. I prefer not to talk about that. I am obviously aware of that.

Senator **Pryor**. We understand that there has been some seizure of financial and business records. I'm telling you. Do not talk about it.

Mr. **Vander Schaaf**. I do not want to talk about that.

Senator **Pryor**. In fact, we are going to take a 5-minute break before we call Mr. Krings. We thank both of you very, very much.

[Recess.]

Senator **Pryor**. Our final witness this morning is Mr. Jack Krings, the Director of the Office of Operational Testing and Evaluation. Mr. Krings, we welcome your statement. We will once again impose the 10-minute limit and then there will be several questions. Mr. Krings.

TESTIMONY OF JOHN E. KRINGS, DIRECTOR, OFFICE OF THE DIRECTOR OF OPERATIONAL TEST AND EVALUATION, DEPARTMENT OF DEFENSE

Mr. **Krings**. Thank you, Mr. Chairman. I do have a statement that I would ask you please to enter for the record.[1]

Senator **Pryor**. We will place that statement in the record.

Mr. **Krings**. And I do have some remarks. I think there is one thing we must clear up before I start my presentation. We do not conduct operational tests. None of the contractors that are in that list conduct operational tests. Probably we would be more better described as evaluation than tests. The label of tests seems to indicate to many that we actually performed the test and accomplished the test, and the contractors who support us accomplish the test, when, in fact, they clearly do not do any testing nor do we do any testing. So we really evaluate. So I think if there is any misconception about what we do, that is probably the largest one, and I thought it would be only fair to clear that up first.

We oversee the test but we do not accomplish the test, nor do any of these contractors who support us. This will be my last appearance over here after 4 years as DOT&E. I came to this town never having worked for the Government, never having been in a bureaucracy. I knew very little about politics. I had been a test pilot all my life, and I would not suggest anybody else attempt to do that. It is a very, very difficult atmosphere. My friends who are astronauts and went to the moon, I think they found probably a more welcome atmosphere on the moon than we found in the last 4 years here.

We have tried, and let me tell you what we have tried to do, and I will try to keep my statement brief also. As the first Director of Operational Test, we had to get the office started. Had to chart the course. We had to respond to some healthy and some unhealthy trends in policy issues, many of which you asked me to address. I think the main points of what we have tried to do over the last 4 years is to bring discipline to the acquisition process so that the soldier gets what he needs. We feel he is the one we ultimately work for even though we report to you and report to the Secretary. We clearly work for the user, and he is conspicuous by his absence in all of these hearings.

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[1] See p. 97.

We never get a chance in the hearings to listen to the user, the recipient of the product, and what he feels the last 4 years have done for the quality of his product. And I think therein is the real answer to everything we are talking about because clearly we all work for him, have to keep him alive, have to keep our country safe. Rather than what we necessarily think about it, its what the user thinks about it that matters

We were ahead of the Packard Commission, I might add, in the Packard Commission's review. After 2 years of Packard in the Department of Defense, Packard clearly expressed that we have brought a new culture to the Department of Defense. And that we have brought a new way of doing business and that operational testing has a dramatic impact on the effect of acquisition of weapon systems.

We brought a lot of increasing discipline, we feel, to the system in three areas. In the area of information, in the area of access, and the area of determination—I think Admiral Carter expressed it as guts. Information is more and better than we have ever had before, and I think those who have been in the system before like Mr. Battista and Admiral Carter, if they were able to look today at what is being processed through the system, would find significantly more information on the process of weapon systems, and a lot clearer and more candid information.

Access. Without access, information is worthless. OT&E information absolutely and unequivocally gets directly to decision makers. We are on the Defense Resource Board. We are on the Defense Acquisition Board, and we try to do our best to keep the Congress informed of every major acquisition in the Department of Defense and report annually and have been asked by the Congress to report on many other occasions to them. Now to the determination and the guts. I am here.

The organization has never survived before. It has always gone away, but this time it is still here 4½ years later. This is the first time the organization has ever existed more than about a year. We have created a tremendous amount of controversy. There is no question about that, and I might suggest to my successor, if he does not create controversy, he is probably not doing his job.

I think we have made quite a few accomplishments, and I will talk about them in just a moment. Let us get back to information. The first test that we were involved in, and the Chairman and I had many discussions about, was DIVAD. The quality of information during the DIVAD development process did not exist. Nobody including yourselves knew what was going on during the process of the development of DIVAD.

The testing was being done, but the reports were not coming through. It was inadequate. There was no path for information as it is being tested to get to you nor to the Secretary of Defense and so judgments made during the progress of DIVAD allowed us to invest a lot of money before we found out whether it really worked or not.

The SECDEF asked us to oversee the operational testing, which we did, and we provided that information directly to the Secretary of Defense, and the tragic decision had to be made. There are healthy trends. We do have direct access to the Secretary of Defense. I talked with Dick Cheney the other day on B-2. I talk to him often. I talked to all of his predecessors a lot on the current programs, where they are and where they are going, and he knows clearly what the programs are doing.

The Secretary of Defense never knew clearly what the programs were doing before our existence, nor did a lot of other people, but they do now. The DIVAD development testing was not used. The information that was available and knowledgeable to many was not used by the decision makers because there was no path for them to get the information.

We spent $1.8 billion before we found out what was wrong. We have institutionalized the process now where DIVAD absolutely cannot occur in the future if the procedures that we have established are followed. It is impossible to do that. You cannot get that far along in any system without the Secretary of Defense and yourselves knowing what the condition of that product is.

We are not talking about the past. We are talking about now and the future, the payoff of what we have been doing, what we have been trying to fix, not the inability to fix something that happened in the past. Early operational assessments are healthy and they are necessary. The lack of early operational assessments is what caused the problems in B-1, what caused the problems in DIVAD, but we have tried to structure a mechanism now where that absolutely cannot happen.

Early operational assessments absolutely do not replace operational testing. One must still do a full, realistic operational test on every product when the product is available before it goes into production or the first time the product is clearly available in its fielding status.

We did early operation assessments in LRAACA, which were very helpful for both the program manager and us to understand where that program was going and improvements and fixes are coming as a result of that.

The C-17 we were involved in an EOA and we significantly cut the acquisition rate, the authorization rate, to ensure that testing was done before large judgments were made. In ADATS, the Congress requires us to do early operational assessments by law. We will do early operational assessments for ADATS.

The GAO has been quoted recently as saying it is a step forward in filling a void in the availability of operationally oriented information. Their study indicated that early operational assessments are very valid and very helpful.

You asked about a plan to get to know what the testing would be before it started. We have a test and evaluation master plan now. Even though it has improved significantly, we agree that testing is not as realistic as it could or should be. But it will hopefully continue to get better. Limitations include instrumentation, threats, targets.

Admiral Carter had great difficulty in getting a deep, fast target to try to test torpedoes against. He was unsuccessful. We have been successful. There is a deep, fast target, and we will test against it. Bomber size targets. Tony used to always be very concerned about air-to-air missiles. They have never been fired at large targets. Never. We are getting large targets. We are going to do air-to-air firing against large targets. They are not even American targets. They are realistic targets.

The access, which we said, is important. We do have access. Information is useless without it. Being on the DRB and the Defense Acquisition Board has led to more access than ever before. And I realize I am running out of time. When I first got there, Cap Weinberger did not know what was going on in the B-1 program, and he and I discussed this. And he put us in the position to be able to give him direct information on weapon systems and their progress. And since then operation testing leads every discussion with the Secretary or every Defense Acquisition Board activity.

The results of operational tests are up-front to determine if is it working first. And I think the Congress has benefited from that. They certainly must have because they have put us in the driver's seat in ADATS; the SIMATS. CAS testing has been given to us to oversee because they feel that we will give them a fair, objective assessment.

I am skipping a little because I am clearly running out of time. Access to information. Before our existence, none of the operational test agencies were ever involved in classified testing. AFOTEC, the Air Force's operational tester, never saw an F-117. We are clearly now deeply involved in all "black" programs. We feel they should work just as much as "white" programs.

With respect to the determination to get it done, we have had success and support from the Secretaries, from the Deputy Secretary in getting the people that we need. But we do rent experts, as you see. We rent experts because we need experts, and we do not have experts. But we do not use them to make judgments. They do not make final decisions. They support us as experts to our operational testers who are military and recent military people.

There are some unhealthy signs, I might add. Test avoidance keeps increasing. The services would still like to avoid testing. The Congress seems to want to avoid testing. ADATS was legislated to just buy it, do not test it. We changed that legislation. The AHIP was legislated by the Congress to buy it in a new configuration without testing. We were successful in changing that, the mind of the Congress.

For recovery vehicle for tanks, there was a letter signed by 22 Senators and Representatives suggesting it be bought even though it did not pass any operational test. Our oppositions to these attest to our so-called "guts." But the Congress has seen to cut-off the resources that we need to get many of the new pieces of equipment, instrumentation, and capabilities to do better operational testing.

I think we have done a lot. EOA's, better TEMP's, a maturity matrix that allows everybody to see how a program is processing. The Test and Evaluation Committee is putting a national test resource plan together instead of everybody doing their own thing at great cost and lack of cooperation. This omnibus contract brings us some competition finally in the area that we are operating rather than sole source.

The involvement in "black" programs I think is very important as are our beyond LRIP reports. We have heard no comment from anybody who gets a beyond LRIP report that it was inadequate. We have heard no comments from the people who receive the products that say they do not work. So I will finish. For my successor, the price of independence is a constant attack from those who would leave you independent from all but them.

We have seen a lot of progress. Therefore, the goal is attainable. My successor will have quite a challenge to maintain and improve the information access and determination which we have been able to accomplish. I would like to come back in a year and assess and see how he is doing or she is doing.

I suggest that you have the recipients at these hearings find out from all the people that we work for, the soldiers, sailors, airmen, and marines, what do they think of the process, not what do you think of the process or what do we think of the process, but what do they think of the products that they are getting? Are they better? Have they been adequately tested, and are they being represented properly. Because that is the goal that we sought, and I sometimes wonder if that is the goal we keep in front of us.

But clearly, without your understanding and support, the accomplishments of this office will not be possible. Thank you.

Senator **Pryor**. Thank you, Mr. Krings. Mr. Krings, you were asked a question in your confirmation hearing that went like this, do we need such an office as an independent office of operational testing? I will quote your answer. "Yes, I do, but hopefully it will be a transitory thing."

Do you still believe the office is needed?

Mr. **Krings**. Absolutely. It was not a transitory thing. I was incredibly naive in my understanding of what the pressures are to get weapon systems through and the reluctance to do operational testing, and I now feel that it must be permanent.

Senator **Pryor**. All right. You are about to leave and go into another world, and I wish you well, I might say. Now tell me what type of individual should lead this office? Who should be your successor? Describe that person.

Mr. **Krings**. Clearly somebody who does not have an agenda. You talked about conflict of interest here between contractors. Number 1, I have never seen any experience in which the conflict of interest has really risen. It is the potential, we might add. We have never had a problem with conflict of interest, nor has one been documented to my knowledge of anybody that supports us. The potential is clearly there, but we have no instance of it happening, and we watch it very, very closely, I might add. But they are experts.

If you have what you are driving for, what you would like to have is a shoe salesman because he has no conflict of interest. If you have a former Admiral, he may have a conflict of interest with the Navy. If you have a former Air Force General, he may have a conflict of interest with them. If you have a person who worked for a corporation, he may have a conflict of interest, but anybody who is capable of doing the job that is an expert and has the depth also has the potential conflict of interest.

Senator **Pryor**. Several people have left your office recently, and they have gone to work for some of these very contractors that are doing the evaluation of testing for your office. Does this concern you? Is this a potential conflict?

Mr. **Krings**. Everything is a potential. Actually, no. There has been actually no conflict of interest. Potential, yes. But if you can control the potential which we have been able to do successfully up to now, I do not see why we want to cut off our nose to spite our face, to deny us the people we really need, the experts, who can make sure that the weapons get to the soldiers properly as opposed to those who will not know how to get the weapons to the soldiers properly.

Senator **Pryor**. Do you evaluate the tests of missiles?

Mr. **Krings**. Yes.

Senator **Pryor**. Were you aware SAIC is associated with companies that have 56 percent of the missile production of the Department of Defense in this country?

Mr. **Krings**. I do not think that figure is true, sir. I do not think SAIC has 56.

Senator **Pryor**. Well, let us say 40 percent, 30 percent. That is still a lot of missiles.

Mr. **Krings**. I think it is significantly lower than that, but still I would agree, we do not go to Hughes who builds AMRAAMS and we do not go to companies that build Sparrows to do that. SAIC has been in the testing business for years and years. They are highly experienced. They run ranges, and they have been in the business for a long, long time. They are very, very experienced in testing.

Senator **Pryor**. All right. Let us say that you do not go to Hughes. I commend you. But what you do is you go to the contracting and consulting firms that represent Hughes. They are doing the evaluations of the tests that you are making judgments on, Mr. Krings.

Mr. **Krings**. But truly, Mr. Chairman, they do not substantially affect what our judgments are, and what we report to you. If we are looking at instrumentation, when we have a fellow who has been flying airplanes for years, and we are doing a test of a missile, we try to bring somebody who understands instrumentation. The pilot that we have working for us that understands missiles may not understand instrumentation. That is what these people do for us. They do not make our judgments. They try to bring to us expertise throughout the planning. I mean an AMRAAM shot takes about 20 seconds. That is all the test really lasts.

But the preparation and the verification and the knowledge that it is being done well takes an army of people of various expertises. We do not have that, and I am not so certain we should let him sit in the corner for a month until we need him. We buy expertise. We do not buy judgment. We buy expertise. And I do not know how else one could do it.

Senator **Pryor**. You are buying $85 million worth of expertise, I think, right now from TRW and SAIC.

Mr. **Krings**. Sir, we really only spend $5 million a year on these people. The majority of our expenditure goes to IDA which is not a for profit organization and not affiliated in any way, shape or form with any of the contractors. That is where the majority of our money goes, for support, to the Institute of Defense Analysis, which is not a for profit and not one of these organizations.

Senator PRYOR. Our staff has, I think, probably prepared one of the finest, what I call, committee reports I have ever seen on one particular function of Government and that happens to be your office. We take, once again we go back to BDM. They are very visible.

Mr. KRINGS. Yes, sir.

Senator PRYOR. They are very large. They are all over the place. They work for everyone. They get all these great contracts. They are very profitable. Was BDM involved with the testing of the B1 bomber in any way?

Mr. KRINGS. I have no idea if they were involved with the testing of the B1 bomber, but they did support us in our assessment of it. They clearly did not do any testing for us.

Senator PRYOR. All right. We are modifying the B1. How many millions of dollars, I do not know, or billions of dollars, have we spent on the B1 bombers. We are making add-ons and changes correct?

Mr. KRINGS. I think in all truthfulness, sir, I think most of them are fixes. Some of them are add-ons, but a lot of them are fixes.

Senator PRYOR. Do you test the fixes and add-ons?

Mr. KRINGS. They will be tested by the Air Force, and we will observe and oversee their testing of them, yes, sir.

Senator PRYOR. Will the same people that had the contracts and subcontracts to manufacture what I call "the faulty B1 bomber" be doing the testing and evaluation?

Mr. KRINGS. No, sir. Nor in any of these cases does the manufacturer get involved in the testing or the reporting of the test.

Senator PRYOR. Will the consulting firms that represent the major contracts and subcontractors be involved in evaluating the test results and giving those results to you?

Mr. KRINGS. No, the consultants that represent those companies, I do not even think are in the testing business.

Senator PRYOR. What is Rand doing? Is Rand a manufacturer?

Mr. KRINGS. No, but I do not think they represent anybody who builds anything.

Senator PRYOR. They work for you?

Mr. KRINGS. No, Rand does not.

Senator PRYOR. You hired them?

Mr. KRINGS. No, we had one project with Rand. That is all. Rand does not work for us. They are not one of our regular support contractors.

Senator PRYOR. What about Techplan? Are they a manufacturer?

Mr. KRINGS. No, not to my knowledge.

Senator PRYOR. They are consultants? They work for you. Who else do they work for?

Mr. KRINGS. I am not familiar with Techplan. I do not know of anything significant that they have done for us. Our primary contractor in the past was BDM. Our new primary contractors that are taking over the primary role, have many subcontracts—there is probably 500 below that list—that each one of them can use to try to come up with the experts that are necessary for the test. But clearly our main contractors that we deal with that support us have been in the past BDM, and are now going to be competitively SAIC and TRW.

Senator PRYOR. TRW is probably one of the largest defense contractor and recipient of defense dollars in this country; correct?

Mr. KRINGS. I think you are absolutely right.

Senator PRYOR. Are they going to blow the whistle on some weapon?

Mr. KRINGS. That portion of TRW that is working for us, we will have to find out. They have not yet done any work for us. They have presented a plan, an internal plan that we looked at very closely and has been used by many other arms of the Government, I might add, but that does not necessarily make it right, I agree, to ensure an absence of conflict of interest. We will find out.

In fact, the first case that we had with SAIC, I think it was SAIC in SDI, we elected not to use them, and we moved over to IDA because we felt they did have a potential conflict of interest to the degree that we did not feel comfortable with them so therefore we did not use them.

And Techplan, I have just been advised, was never awarded a contract. We do, we have made discretionary moves in the past to preclude contractors from supporting us that we viewed the conflict of interest potential was too high. And contractors, I might add, have elected not to do work for us because they felt that they had a conflict of interest.

But again, I do not know of any case in which there ever has been an actual conflict of interest.

Senator PRYOR. Do you recall any contractor or consulting firm that has come forward and said we prefer not to handle this business because there may be a conflict?

Mr. KRINGS. Yes, sir.

Senator PRYOR. How many?

Mr. KRINGS. BDM did it. I have been handed a letter here in which I think they were involved in the C-17 and elected not to participate in the C-17 evaluation. Again, they do not do testing, but not to be involved in the evaluation. I think it is C-17. Yes, sir. Could I enter that if it is of consequence? We are talking. I am not trying to——

Senator PRYOR. I will put that in the record, Mr. Krings.[1]

Mr. KRINGS. OK. Thank you.

Senator PRYOR. Thank you.

Now in the last 2 or 3 years, and you and I have disagreed on this point, so it is not secret, you have attempted to move the testing into the developmental areas. You wanted basically to combine development and research into testing. Is this not correct?

Mr. KRINGS. I would express our intent differently. The way I would express it is in view of situations like DIVAD and B1 where during development tests, the products of that testing, the knowledge, the facts, were not in fact going to the people who were in charge. The Secretary of the Air Force knew nothing about the B1 problem. The Secretary of Defense knew nothing about the B1 problems. You all knew very little about the B1 problems. I, as a then contractor pilot for another company, knew more about it than you did.

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[1] See p. 165.

So what we wanted to do is we wanted to ensure that cannot and will not happen again. The information that comes out of development testing, not the act of development testing since OSD does not do any testing either, but the facts that come out of it early that indicate there may be problems or success, whatever the case may be, needs to get to you. It needs to get to the Secretary of Defense. It needs to get to the decisionmakers. It has not been doing that. It clearly has not been doing it.

There is immense evidence that it has not been doing that before. It is doing it now because we are extracting that information from the development process. It is being evaluated by an independent operational tester who has no connection with the product, who has no connection with the system program office, and we are trying to present this to the Secretary and to others and doing what the Congress has asked us to do in the B2, for instance. B2 is in development. It has just barely started, but we continually have to and want to tell you what the program progress is in B2.

We do not want to take over development testing. We have never wanted to take over development testing. Nobody in OSD does development testing to take over in the first place. But the information that comes out of this early testing, I would think, you would really want to know in order not to do another stupid thing like DIVAD.

Senator PRYOR. Now you keep talking about DIVAD. And you sort of claim credit, and with all due respect, I am not certain that the credit is all due to your office.

Mr. KRINGS. I think it was tragic, not credit.

Senator PRYOR. I think it was tragic, too. We stopped a weapon.

Mr. KRINGS. The soldiers do not have one.

Senator PRYOR. How many weapons have you stopped?

Mr. KRINGS. Stopped?

Senator PRYOR. Stopped.

Mr. KRINGS. I do not think we have stopped—that is not true. We have stopped AHIP briefly.

Senator PRYOR. You stopped what?

Mr. KRINGS. AHIP. We did not cancel AHIP, but AHIP was never produced in one of the roles it was supposed to because it never passed an operational test. Stopped the progress until it was adequate to field for a soldier to use, we have stopped many of them.

Senator PRYOR. What about Bigeye?

Mr. KRINGS. There is no Bigeye deployed. We stopped Bigeye.

Senator PRYOR. We are still making them.

Mr. KRINGS. For tests. We are not deploying Bigeye, and at the rate they are going, I do not think they ever will.

Senator PRYOR. But you signed off on Bigeye?

Mr. KRINGS. No, sir, I absolutely did not. And I think we all in this room know I did not. I said you could never produce Bigeye until it passes an operational test, clearly said that, absolutely and unequivocally, and you and I have discussed that for hours and hours. We said it has potential. Therefore, you should make some and test them, but if they do not pass the test, a rigorous operational test, they absolutely, unequivocally cannot go into production. And that is one thing we are very much agreed on.

Senator PRYOR. Let me back up just a moment. Do you yourself sign off on these contracts to these companies?

Mr. KRINGS. No. We are not involved in the process of contracting nor the selection of contracting nor the source selection process itself.

Senator PRYOR. That is DTESA, correct?

Mr. KRINGS. That is correct. They are contracting agents.

Senator PRYOR. I love all these names, and I cannot keep them straight. That is DTESA.

Mr. KRINGS. It is the Albuquerque group. It is easier to remember it that way.

Senator PRYOR. They are in Albuquerque. All right. Here is DTESA in Albuquerque. Who else do they contract for?

Mr. KRINGS. I am not certain who all. I know that they do contracts for the development test and evaluation in USDR&E, and I know they do them for the Army and for other organizations because they have a fully developed contracting capability which other people use besides us. Those are a couple that I know. I am sure there are many others that I am not familiar with.

But they clearly process and determine the contractors and make the assessment of who the contractor will be.

Senator PRYOR. You do not serve in any capacity on a board or advisory panel of DTESA to help, let us say, award these contracts?

Mr. KRINGS. Absolutely not. When a contract like that is made, there is a group put together, and that is their sole job to assess the contracts and they do it in a very, I think, a very fair way. Nobody knows who the contractors are, et cetera. It is a process that is overseen by the contracting people. But they create an organization to live through that, to select that particular contractor, and there is what they call a source selection panel that is put together and the rules are very, very stringent, and we have no involvement with that source selection panel.

Senator PRYOR. Pardon me. Go ahead and read your notes for just one moment.

Mr. KRINGS. Sure.

Senator PRYOR. If you do not sit on the DTESA board or the panel that awards the contracts, is there anyone in your office who does?

Mr. KRINGS. Yes. We had two representatives as DDT&E had two representatives, and I think there were two representatives from DTESA. And their primary job obviously was to assess the technical capability of these people, but to the best of my knowledge during that entire process none of the participants who made that judgment knew what companies they were, in fact, judging on.

And Pete Adolph who runs the DDT&E and I were given a review periodically of the process, not of the status of who was winning or losing because quite truthfully the participants themselves did not know. It was coded so you could not tell who was who. But we did look at the process and we found the process to be normal, the way it is normally done within the Department of Defense and appeared to be very fair and reasonable and would give us competitive activity as opposed to sole source activity, which is what we wanted.

Senator **PRYOR**. All right. Last September, I believe, our staff asked for all the contracts that the Office of Operational Test and Evaluation had with private industry.

Mr. **KRINGS**. Yes.

Senator **PRYOR**. We got a list. Five contracts were omitted. Is there a reason these contracts were not given to this Subcommittee?

Mr. **KRINGS**. No, sir, I am not familiar with the request or the response.

Senator **PRYOR**. Well, actually we asked last July and again this May, rather than September. Now four of these contracts were with C3P. Tell us all that you can about C3P.

Mr. **KRINGS**. Well, first I might say again that we did not contract with C3P. DTESA did as they do for everything. We do not directly contract with them. The concept of C3P, I mean it has become a bad word, it seems like, when in fact I think it was really utterly simple to begin with. And I would hope that everybody here would go through the same sort of judgment given the same opportunity.

We clearly did not have enough targets to pursue realistic operational testing. We did not have the numbers, and we did not have the types and they were not new enough. So we said what can we do to improve this. I found, as you all can find if you pick up any journal, that Mig 15's, 17's, 19's and 21's are commercially available throughout the world.

A Mig 15 is a very old airplane, and I could not agree with you more. But it is not much older than an F-86 which we use for targets all the time and costs about as third as much. So it seemed like the old vintage airplanes that could be obtained, Mig 15's, 19's, 17's and even 21's, at the price that they could be obtained, could be droned and shot at and used as targets.

So we said why do we not try to do that. Clearly, you do not want to not fly them if they are available to fly and can be used as radar targets because we were buying radar targets commercially in order to fill in the testing that we were doing. The only people that we could find in the free world in our area that had a license to operate a Mig or to maintain a Mig was C3P, the organization within C3P. They had an FAA license to fly them. They had an FAA license to maintain them. They could be bought at a reasonable price, that could be used advantageously in testing. Clearly not to act like a Mig 29. But certainly to be as good as a T-33 or as an F-86 and a very low cost potential drone that would actually give us more information than shooting down an old F-86.

When we moved up to Mig 21's, which were very, very inexpensive also, then we would be shooting at a very dominant airplane around the world. The North Korean Air Force is dominantly Mig 21's. And they are potentially an adversary. So Mig 21's exist, and they are also available commercially, and it seemed like a way to save money. So we went after them and said how can we buy them, how can we operate them, how can we use them in testing, and that was the sole system, the only motive to what we were trying to do.

And we found a company that could do it, and they did it, and they did it very successfully and very well.

Senator **Pryor**. Any competition among companies to supply these old planes to our Government?

Mr. **Krings**. How can you get a competition when there is only one person in the world who has a license?

Senator **Pryor**. You mean from the FAA?

Mr. **Krings**. Yes. Nobody else could maintain or fly it. It is like competing a Dolly. You cannot get it anyplace else.

Senator **Pryor**. FAA informs us that they feel that there are other companies who could qualify for this same license.

Mr. **Krings**. Oh, there are clearly, and there is no question about they could, but they did not have the license. It would take a significant amount of time and money, and I do not know whether that is really competition if you fund another company to get as good as the company that is there and then compete them. I do not know whether that is really competition or not. If you go out and buy two more companies, fund them to get a license, and teach them how to fly Migs and go buy Migs so that they can compete with somebody who is already there.

Senator **Pryor**. How many Migs do we have?

Mr. **Krings**. Right now six to eight. The thing I would also like to put in perspective that the aircraft portion of all of this improvement in operational testing only represents 9 percent of all the money that we are trying to get to put into improved operational testing. Only 9 percent. It obviously brings the most focus. So does the Paris air show, but that is life. Airplanes are interesting. Therefore, they get a lot of focus, but the multiple object tracking radars that we are buying that we desperately need, the targets that we need, the instrumentation that we need, is never discussed. Only those 9 percent of the funds that go to buy some old airplanes now, maybe new airplanes later that can be used positively to do realistic—there is not much more real than a Mig 21—testing and very cheap and effective drones. I just want to put that in perspective.

Senator **Pryor**. Are we going to shoot them down?

Mr. **Krings**. Yes, sir. We certainly intend to.

Senator **Pryor**. We are going to go through these six to eight Migs then pretty quickly, is this correct?

Mr. **Krings**. The Army would like us to get a lot more because the requirements for targets are just lacking. There are not targets available to do the ADATS and other testing that we need and this was a windfall opportunity for the Army.

And they have agreed that they will use all we can get and drone. They are significantly better and cheaper than anything else they can get.

Senator **Pryor**. Really wasn't this little company C3P put together at the suggestion of the Pentagon?

Mr. **Krings**. Absolutely not.

Senator **Pryor**. Maybe even yourself or your office as suggested in the press?

Mr. **Krings**. Absolutely not. We did not insist and we did not suggest. We found that there were, in fact, available Mig 15s, 17s and 19s, and we said who will sell us those and who can run them and maintain them. They came forward to DTESA and to us and said we have pilots who are qualified to fly Migs. We have maintenance people who are capable of maintaining Migs. We have an FAA license, and we have parts and we would like to do that. And we said is there anybody else that can do it? We asked the FAA and there was no other license in the United States or Canada or nearby that could do that. So we said where else can we go?

Senator Pryor. Did you investigate the people that you were dealing with that were in this small company?

Mr. Krings. I did not because our contracting agency at DTESA is in that business, and there are professionals to do that. So I did not investigate those people's financial background, their capability, I mean their capability to perform, or what their history was.

But DTESA contracting people have professional people to do that, and they did that.

Senator Pryor. Did they not become aware that one of the officials or people involved in this transaction had been debarred?

Mr. Krings. Yes.

Senator Pryor. When did they discover this?

Mr. Krings. I think initially when they first looked into it. They knew it all the time.

Senator Pryor. Did this end up any kind of a red flag?

Mr. Krings. They did not tell us because in the eyes of the contracting facility the debarment that existed was not an impediment to make the contract, as I am sure there are many rules about contracts that I do not know too much about. But if somebody is debarred from doing something one time in one area, I do not know that it has a debarment effect on all activities. But we were told later when this came up that, yes, in fact, they knew that. They made that assessment, and in their view, it had no adverse effect on DTESA giving them the contract.

Senator Pryor. How do you evaluate DTESA?

Mr. Krings. They have fallen significantly short of what we expected out of them. When we first started into this effort we were impressed with their contracting capability in the past, and we felt that they could grow to support what we needed to have done. We found out since then that they have perhaps grown a little too fast, and they are, in fact, not as capable as we expected them to be, and we, and as has DTT&E, Pete Adolph and I, have certainly pursued other means of contracting, which we are doing today because we are unhappy with that success, with that effort.

I am not saying that they cannot be made to do it better, but we clearly do not think that their response has been adequate to this point in time.

Senator Pryor. You are recommending that another agency, I guess, a contracting agency be established, is this correct?

Mr. Krings. We are talking to the contract people, the Air Force, who are talking to contract people in the Pentagon. We are talking to the people in DDT&E who actually have a much deeper history in contracting than we do. And DDT&E and I are working together to see whom we might be able to use to do the contracting for us in a more straightforward manner. As yet there has been no resolution.

Senator **Pryor**. Do you think this should be created before or after you leave? Do you think your successor, for example, should have a role in establishing who can best contract for this particular office?

Mr. **Krings**. If the service that we are getting now is an impediment to progress, then I think it probably should be done right now. If we can live with the impediment that we are having and contracting right now until a predecessor is selected and he is able to do that, then I think that should be the case. The issue is not him or me, but what it is really doing to the process because I think that is what we are most concerned about—getting the operational testing done and it being done properly—not necessarily who selects the contracting agent.

Senator **Pryor**. You know we are not talking about a small thing. We are talking about a new function in an office or, perhaps a new office, that will have the power to allocate millions and millions of dollars of contracts.

Mr. **Krings**. Yes.

Senator **Pryor**. I mean this is no small thing.

Mr. **Krings**. Oh, clearly.

Senator **Pryor**. We are also talking about an office that is going to have to ascertain whether there are potential or, in fact, real conflicts of interest present.

Mr. **Krings**. Yes.

Senator **Pryor**. So this is no small thing.

Mr. **Krings**. Absolutely.

Senator **Pryor**. You are saying, and I have a copy, I do not think it is any secret, of your memo to the Assistant Secretary of the Air Force that you want to establish this new office before June 23.[1] That is next week. That is the week before you leave.

Mr. **Krings**. That is right.

Senator **Pryor**. Why do you think this ought to be done before you leave?

Mr. **Krings**. Because I think the Air Force can probably take over this activity, and that is what we have asked them to do. The Air Force at Kirkland has all the capability to oversee this contract. I do not think—I know many of you are concerned about independency from the Air Force—but in the actual process of a contract, I do not see how they could influence the outcome of testing.

And they have an organization at Kirkland that could do this and we would strongly suggest that they do it. We have not been successful in getting a response from the Air Force.

Senator **Pryor**. All right.

Mr. **Krings**. So we said if you cannot do it, tell us how to make an organization of our own that we can do it.

Senator **Pryor**. Is this going to be another layer of bureaucracy?

Mr. **Krings**. I would certainly hope not. We would like to take advantage of that bureaucracy which already exists.

Senator **Pryor**. All right. You say you have confidence in the Air Force contractors?

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[1] See p. 166.

Mr. **Krings**. No, in the Air Force Contract Office at Kirkland that processes contracts.

Senator **Pryor**. Are you satisfied with all of the contracts of the B1 bomber?

Mr. **Krings**. I have no insight into the contracts of the B1 bomber, not the judgment for contracts particularly but the process. That is what we would like to use

Senator **Pryor**. I am interested in the judgment of the contracts; this Committee is interested in the judgment of the contracts.

Mr. **Krings**. But, sir, the contracting officer does not make the judgment once the contract is made. He processes the contract.

Senator **Pryor**. The contracting officer allocates or grants the contract.

Mr. **Krings**. The contract has been made. What we are looking for is somebody to administer it.

Senator **Pryor**. I would like to talk to a contracting officer someday, and I would like to ask them if they truly feel that these same firms that manufacture the weapons, the consulting firms that work for those manufacturers and——

Mr. **Krings**. Yes.

Senator **Pryor** [continuing]. Even foreign Governments, if they can be independent, in their judgment?

Mr. **Krings**. Yes, that is——

Senator **Pryor**. That is the question I would like to ask a contracting officer.

Mr. **Krings**. Yes, sir, and that is precisely what we ask them because the contracting officer made that judgment to select those companies for us to do that.

Senator **Pryor**. Now you had a person as your representative of this office when DTESA granted $85 million worth of contracts to TRW and SAIC. Today you are trying to hide behind DTESA.

Mr. **Krings**. No, sir, I am——

Senator **Pryor**. You are saying, oh, I have nothing to do with these contracts. You had a representative on the board.

Mr. **Krings**. We had two.

Senator **Pryor**. You had two.

Mr. **Krings**. Yes, sir.

Senator **Pryor**. How many people on the board?

Mr. **Krings**. I think over six. I am not certain.

Senator **Pryor**. So you had a third of the board.

Mr. **Krings**. Senator, I think that is a little bit of distortion. Those two people did not know what companies they were selecting. Neither did any of the other four know. The two representatives of our office, the two representatives of the other office, and the two representatives of DTESA had no idea which company was A, B, C, or D. It has to operate that way. It has to. But clearly do you not think that people who are going to have to live with that judgment should have some input as to whether they are technically capable of doing it?

And the selection process was done by DTESA, and I think they did a good job. Nobody is hiding. At least I would like to say that I do not want to appear to be hiding behind DTESA. They did a very, very thorough job in making this assessment and making that award. No question about it.

Senator PRYOR. But now you want to create another contracting agency?

Mr. KRINGS. I want somebody else to administer the contract other than DTESA.

Senator PRYOR. You heard the Admiral state that he believes that more of the armed forces personnel, those in uniform, could be a part of this testing process. What do you think?

Mr. KRINGS. I agree with him. I agree with him a little more than I agree with Tony. I think that the service integrity is much higher. I agree with Tony and with the Admiral that the pressure at the top is very high. But the people that we have had working for us who are in the armed forces have had much, much, much more allegiance to their comrades than they have to their system. I can assure you of that. They have been very good despite great jeopardy from time to time, but clearly they have been very good and very fair.

And they do represent their flying brethren or their undersea brethren, and they do it well, and they do it fairly.

Senator PRYOR. Are you aware, talking about the contracting process, that in your contract files there is a memo from a DTESA General Counsel criticizing a member of your staff for attempting to direct a prime contractor to hire a subcontractor? I think the DOD IG has found this problem in another DOT&E contract. Are you aware of this problem?

Mr. KRINGS. That relationship of which you speak on both sides we have asked the IG to investigate. The IG is investigating, and I think when Derek was here, he said that it is under investigation, and I would bow to what he finds rather than what I might think.

Senator PRYOR. I think what we have here this morning, Mr. Krings, is such a volume of information and a volume of questions and unanswered questions, I think we are going to have to have hearing number 2. You are going to be gone by then. I do not know who I am going to bring up and ask questions. By the way, where will you be a month from now?

Mr. KRINGS. I have no idea.

Senator PRYOR. I was hoping you would say BDM or someone like that, but you are not.

Mr. KRINGS. Sir, I might interject. I think that is absolutely true. I think that most of the people here would like to hear that. They would feel vindicated.

Senator PRYOR. Well, I do not know if there is a lot of vindication in this hearing. I do not think that is what we're about. It is not about revenge. It is about a system.

Mr. KRINGS. Yes, sir, but we lose——

Senator PRYOR. And we have talked about it.

Mr. KRINGS. We lose concept of what we are here for. And that is to try to get good weapons in the hands of soldiers, not to preclude them from getting weapons like we did in DIVAD which was really cruel, tragic event. They are still sitting out there with 20 and 30 year old Vulcans. They have nothing better as a result of our ineptness, our combined ineptness, your ineptness, my ineptness, and the Defense Department. And we have something that will fix it.

It is like nobody wants to accept that there is progress. They just want to dig up these sorts of things. I am sorry I get emotional about that, but the staff that I have works very, very hard. They are very honest. They are very sincere, and neither you nor anybody else gives them much credit for it.

Senator **Pryor**. Well, I do not know that your staff has given my staff much credit. Let me read you a memo. Now this one has been out in public before. It was written by a Deputy Secretary at DOD in 1987. It was written to Mr. Costello, I believe. It talks about changing the direction of your office, Mr. Krings, changing its direction and its emphasis.

In one paragraph, it says:

> The only remaining Hill resistance to this approach comes from a small group of staffers, (four at most), who are military reform activists, and only one of those is on the Senate side, Kirk Robertson—

who sits right behind me to my left. He also is hardworking, dedicated and honest.

The memo also says:

> The Senator himself now seems to be a cautious convert to the department's approach.

And the memo goes on and on. Now this is why we lose faith. This is why we lose confidence. This is from Mr. Carl Pflock, who by the way is now with BDM. He left DOT&E. Here is the memo's concluding paragraphs:

> So what does all this mean? It means we must take our time and not make any organizational changes until after the authorization conference report is written and filed. It also means handling the question carefully when it comes to Dr. Costello's confirmation hearing, which you can bet it will.

The memo then goes on telling about each Senator and their knowledge or lack of knowledge about the process. This is why we lose confidence because we feel this is an open desire to subvert the 1983 legislative intent in establishing your office.

Mr. **Krings**. Sir, the word, the key word that you said is "attempt." That memo was never sent, and I never saw it until it appeared in "Inside the Pentagon." It was stolen from our office and given to the press. Dr. Costello never received that memo. Carl Pflock never sent that memo. He wrote it, but he never sent it, and I never saw it.

It was stolen and given to the press. So I do not think that that really reflects how I feel and it really does not reflect how the organization feels because it was never sent. It truly was never sent. Never came out of our office nor did I ever see it until it appeared in the press.

Senator **Pryor**. Mr. Godwin received this memo, the Under Secretary of Defense. He says, "I have reviewed the proposed report and I must non-concur". So the memo did go out.

Mr. **Krings**. "Report," does it say?

Senator **Pryor**. He says, "I have reviewed the proposed report."

Mr. **Krings**. Yes.

Senator **Pryor**. "And must non-concur".

Mr. **Krings**. Yes. I think that was the report that we were, that the Secretary was sending over with respect to testing. I do not think it had anything to do with that memo.

Senator **Pryor**. Mr. Krings——

Mr. **Krings**. Sir, I might add——

Senator **Pryor**. Certainly.

Mr. **Krings**. I have just been told that was Mr. Godwin's nonconcurrence with the N87 report that was sent to the Congress. It really was not, did not have anything to, nor did he ever see the letter or have anything to do with it because it never went out of our office. It only went to the Pentagon, to the press.

Senator **Pryor**. Now tell me about once again C3P? Are those funds frozen now for C3P?

Mr. **Krings**. C3P is no longer under contract to anybody in the Department of Defense to my knowledge.

Senator **Pryor**. Is that program frozen?

Mr. **Krings**. Yes.

Senator **Pryor**. We aren't buying any more Migs or other aircraft?

Mr. **Krings**. There was no intent with the money that is currently frozen to buy aircraft. The money that is currently frozen was to buy radars and instrumentation, et cetera, and to the best of my knowledge, I believe some of the money is being unfrozen to get some assets, not flight assets, not aircraft. I do not know what they are being unfrozen for because it is a classified document that I have not received yet.

But again I point, the Migs come first when, in fact, they are actually lost in dollars. It is a very small amount comparatively.

Senator **Pryor**. We have spent how much? $8 million on the program or something like that?

Mr. **Krings**. But not on Migs.

Senator **Pryor**. Are we spending more on contractors today than we were, let us say, 2 years ago?

Mr. **Krings**. More.

Senator **Pryor**. Is there a reason?

Mr. **Krings**. We have significantly more work to do. Both thanks to the Congress and thanks to the Secretary of Defense and thanks to the increase in work load, for instance, there are many more programs and areas of programs that DOT&E was never involved in before.

A good example, health care systems, huge $8 billion computerized systems to monitor health care. I guess, and I think we would agree that we would like those to work just as well as we do the tanks. So the comptroller asked us to interject ourselves into the process of acquisition of these types of systems, and therefore we are now doing operational testing of computerized systems that will service the soldiers and sailors, not just give them weapon systems.

So we are involved in most of those programs in which no operational testing had ever been done before. It takes people and it takes experts.

Senator **Pryor**. Mr. Krings, I am going to make one request. You do not have to do this today, but I would like to have in writing for the hearing record, if you would be so kind, a list of employees from your office who have left and have gone to work for defense contractors or consulting firms who do work with the Defense Department.

Your aide is whispering something. Is that an improper or illegal request?

Mr. **Krings**. I hope not because I think we would very much like to tell you where our people are and where they have been and who we have now. We are very proud of them in the past and in the present. And we would certainly like to do that. Is that all the people in test and evaluation or——

Senator **Pryor**. You have, I think, roughly 50 in your office now, and I am looking basically at that office.

Mr. **Krings**. But I mean if, say, a person that we had went to work for Rand, and was doing something that had nothing to do with testing, if they worked for any company, in other words, not in the role of testing but in any role?

Senator **Pryor**. Yes, we would like that. The reason I am asking that is that I am attempting through legislation to create a registration system of consulting.

Mr. **Krings**. Yes, I am familiar, and incidentally I completely agree with you, and I wish we had it already.

Senator **Pryor**. I think if lobbyists register and disclose their clients, I think consultants should. We have found so many contracts when we think adverse interests were being paid by our taxpayers. And I am trying to, short of legislation, at least build some data bank on where these folks are going and what is happening to them, what influence they had in granting contracts and also seeing what ultimate effect they are having on the contracts and formulating the policy of the Government.

Mr. **Krings**. Sir, if I might just take one second. Is there a way that you could assess also what they contribute to the overall system as a result of that.

Senator **Pryor**. I cannot assess that. But if you would like to, you feel free to.

Mr. **Krings**. I think it would make a reasonable balance, and it may be that they do not.

Senator **Pryor**. We will place that in the record, if you could.

Mr. **Krings**. Yes, sir, I think it is fair.

[The requested information from Mr. Krings follows:]

List of Personnel Who Have Left DOT&E Since January 1, 1988

Committee request. I would like to receive a list of all DOT&E staff who have left since January 1, 1988, detailing where they went to work.

DOT&E response. Your request for information as to their subsequent employment has been forwarded to the Standards of Conduct Office so as to provide complete and accurate information and to avoid any violation of the Privacy Act. This information will be provided upon their review and approval.

List of Personnel Who Have Left DOT&E Since January 1, 1988

DOT&E response. The personnel who have left the DOT&E since January 1, 1988, are listed below.

Individual's name	Date	Where employed
Col. Daniel Feighery	June 1988	Sigma Plus.
Col. James Leach	July 1988	Self-employed.
Mrs. Barbara Krings	March 1988	Carlye Group, DC.
Mr. Donald R. Greenlee	January 1989	SAIC, California.
Dr. Adelia Ritchie	January 1989	Do.
Mr. Karl T. Pflock	March 1989	BDM, Washington, DC.
Col. Donald Brown	March 1989	Retired, Morton/Thiokol Utah.
Ms. Karen Smitsky	October 1988	Department of Labor.

Individual's name	Date	Where employed
Ms. Patricia McCeady	October 1988	SDIO.
Ms. Yvon DeBeauville	December 1988	Department of Navy.
Ms. Jeannette Barbour	March 1989	Personnel/WHS/DOD.
Ms. Betsey Walker	1988	SDIO.

Senator **Pryor**. Also I would like to request that you submit for the record all memoranda and other documents generated by your office that relate to C3P. I do not think we have heard the last of C3P. I would very much appreciate it.

Mr. **Krings**. We would be glad to do that.

[The requested information from Mr. Krings follows:]

Office of the Secretary of Defense,
Washington, DC, July 26, 1989.

Memorandum for the record.
Subject: C3P Memorandums or Documents.

Office of the Director of Operational Test and Evaluation read files from January 1988 to the present have been reviewed independently by two DOT&E/R&A employees (Ms. Francene Riley and Mr. Charles Jackson). Neither found any memorandums or other documents generated by DOT&E to C3P.

I also queried the people in DOT&E involved with contractors or resources about generating memorandums or other documents to C3P. All responses were negative.

Nicholas A. Toomer,
Deputy Director, Resources and Administration, OSD, DOT&E.

Senator **Pryor**. Mr. Krings, this is probably your last hearing before you leave office, do you have any final words?

Mr. **Krings**. Yes, sir, I really do. I do not know how many of you gentlemen and staffers and helpers have been out and done operational testing or witnessed operational testing. I do not know how many of you have any really first-hand knowledge of what testing is. That is all I have done all my life is test. All my life I have tested. I really am an expert in testing.

We have done it fairly, but I think that without your knowledge of what the process really is—I have heard today and in many cases expressions that are very, very powerful on the effects of the weapons that our soldiers and sailors get made by people who have no understanding whatsoever of the process. And in many cases have not made very much of an effort to find out. And I think if we really want to help these people rather than help ourselves, I think we really should understand who we work for, and what their needs truly, truly are. These various arguments that you and I have from time to time, and others will continue to have, which I think are very healthy, should not be sacrificing a soldier's interest and his life for us to make some sort of a statement or some sort of an agenda.

So I ask you if you are and any of you are really sincere about improving the capability of operational testing, make a real concerted effort to find out what it is and how it works and what plus or minus you might be contributing to the process. I think the soldiers would be happy. I would be happy, and I think you would find yourselves very happy.

Senator **Pryor**. Mr. Krings, you were a test pilot.

Mr. **Krings**. Yes.

Senator **Pryor**. Is this correct?

Mr. **Krings**. All my life before this episode.

Senator **Pryor**. You were a test pilot. I imagine you testing some of those planes 30 years ago or whatever. I cannot ever put myself in your seat in that cockpit. I imagine that you had as one of your priorities, at least, and probably the highest of all priorities to get that plane up and get it back. You must have. That was driving you. The safety of not only yourself but future pilots who would sit in that same cockpit. That is all we are asking for. That is all we are asking for in all these programs is to somehow or another have that priority in mind: the protection of the person sitting in that cockpit, not the dollars that are going to be made in testing these weapons. That is what it is about.

Mr. **Krings**. Then, sir, I think I would beg you to listen to those who do it.

Senator **Pryor**. Mr. Krings, I want to thank you for these years you have given this office, and I want to wish you well in your next endeavor, and I look forward to our continuing friendship in the future. Thank you very much.

Mr. **Krings**. Thank you.

[Whereupon, at 12:25 p.m., the Subcommittee was adjourned subject to the call of the chair.]

APPENDIX

STATEMENT OF ANTHONY R. BATTISTA TO THE FEDERAL SERVICES, POST OFFICE, AND CIVIL SERVICE SUBCOMMITTEE

JUNE 16, 1989

Mr. Chairman, thank you for inviting me to testify before your Subcommittee on the subject of Test and Evaluation.

In the way of background I served as a Professional Staff Member with the House Committee on Armed Services for over fourteen years during the period January 1974 through February 1988. Prior to that I was an Aerospace Engineer with the National Aeronautics and Space Administration, a Supervisory Mathemetician with the Naval Weapons Laboratory, Dahlgren, Virginia, and a part-time college instructor in mathematics and computer sciences. I retired from the Committee after 25 years of government service and have just completed 30 years of experience in government and industry in the defense and aerospace community.

Mr. Chairman, the views that I express here today are my own. My view on the Department of Defense test and evaluation process is that we are no better off today than we were prior to Public Law 98-94--that legislation that established the office of the Director, Operational Test and Evaluation.

I am most concerned about the current defense environment. There has been an adversarial tone between the Department of Defense and the Congress. The Pentagon has spent far too much time finding ways to circumvent the Congress rather than in working with the Congress. The defense industry believes it is being over regulated by the Congress and the Department of Defense. All participants seem to be engaged in parallel monologues rather than dialogue. The Congress is frustrated by the lack of progress subsequent to the enactment of Procurement and Test reform legislation.

One an only hope that the present Secretary of Defense with his extensive experience in both the legislative and executive branches of government will change the tone and reestablish the communications with Capital Hill that are necessary in structuring an effective national defense program.

In January 1986, I was asked by House Armed Services Committee Chairman Les Aspin, to appear before a joint hearing of the Procurement and Research and Development Subcommittees on the subject of test and evaluation. I concluded my presentation with the following observations:

- There are many good test programs conducted by honest objective people in the DoD but,
- Each year the number of success oriented, unrealistic tests increases and the data misrepresented to the Congress
- Congress is being stonewalled on PL 98-94
- We need quality not quantity testing
- Objective military/civilian testers become persona non grata

I have seen no information that would lead me to amend my conclusions at this time. The B-1, the Peacekeeper Missile, the Air Launch Cruise Missile, are just a few examples of why the test and evaluation process is still deficient.

In fact we are still buying several weapons systems that we know have major deficiencies and cannot perform as advertised. In some instances the requirements have been downgraded to justify the procurement.

Obviously, legislation such as PL 98-94 didn't fix the problem. It didn't fix the problem Mr. Chairman, simply because the whole Department of Defense acquisition process is screwed up and the adverse affects show up in test and evaluation.

The problem begins with the Department of Defense doing too many things rather poorly instead of those things that are absolutely essential to our national security in a qualitative manner. In fiscal year 1976 there were some 600 major program elements in Research and Development. The budget for this account was about $13 billion. By 1986 the number of programs increased to over 800 and the RDT&E account had passed the $42 billion mark. Keep in mind that for every dollar spent in advanced and full-scale development today, we generate a mortgage of at least $10 in procurement within a five to ten year period. Since it is rare for Congress or the Administration to ever terminate a full-scale engineering development program, we have too many programs not all of which are essential to national security.

Combine this with an exorbitant federal deficit, the emphasis on developing platforms and systems, program stretch-outs rather than terminations, and the path becomes clear--cut back on testing and cut back on our technology base. The proof lies in the fact that the operational user is not happy with the product that is delivered. In the area of technology we have already lost our lead in microelectronics, infrared detectors, and other key areas to the European and Japanese communities.

The problem is further exacerbated by the wrong kind of procurement reform legislation that has been passed by the Congress.

At the outset I would state that credit for recognizing the need for procurement reform should be given to the Congress. The blame for the deficiencies in the procurement reform or the adverse affects as a consequence of the reform rightly belongs to the Pentagon. The Department of Defense leadership rather than working in harmony with the Congress to get the defense establishment in order took an adversarial and defensive role and accordingly, procurement legislation for the most part was crafted on the floor of the House and the Senate. While each author of each amendment had the best intentions, the cumulative effect of all the provisions have resulted in the undermining of both our industrial and technology base. I could go into this in more detail if you desire.

I recall that when the Ranking Minority Member of the House Armed Services Committee recommended the establishment of a Blue Ribbon Panel chaired by Dave Packard to address the need for organizational and procurement reform, the chief adversary was the Secretary of Defense. The Ranking Member had to request a meeting with the President to implement the Packard Commission.

Despite Congressional reforms and the Packard Commission recommendations the defense acquisition process is in my opinion worse off today than it was pre-1977.

I was interviewed along with Congressman Dickinson and Senator Bingaman by members of the Commission who were assessing "Packard One Year Later." I suggested at that time that we were worse off post-Packard than we were pre-Packard and there was no rebuttal by members of the Commission but simply the judgement that it was important that the framework of the Commission's recommendations be established for the next Administ~~ration.~~

You were lulled into a false sense of security by passing procurement reforms. Yet, these reforms did not obviate Operation Ill Wind. These reforms have not put an end to the overclassification by the Department of Defense of acquisition related documents that in effect generate a "black market" for information and information peddling.

The reforms have not resulted in competition that is giving us a better product or reducing costs but in fact have resulted in competition simply for the sake of competition. Companies are going through as many as ten Best and Final Offers--and at the end of each step a "black market" for information is being created.

The Procurement Integrity Act is most certainly well intended. I am concerned over the lack of definition of some of the terms used in the various provisions of the Act. For example, there is no definition of when a procurement actually begins relative to the compromise of proprietary data. It is my judgement, however, that this Act should serve as a deterrent to impropriety and might even serve as the basis to repeal or amend other procurement reforms.

The acquisition process is the foundation for test and evaluation. Test and evaluation is the final step in transitioning a system from development to the operational user. If the foundation is weak then the test and evaluation process will always leave a great deal to be desired.

With the present Secretary of Defense the Pentagon has inherited one of the smartest individuals to have served in the Congress. The Deputy Secretary of Defense is no stranger to the acquisition process. He achieved a remarkable record in the industry. If these two individuals cannot straighten out the acquisition process then this country will be committed for many years in the future to investing a lot in defense and getting very little in return.

The test and evaluation process can be amended concurrently with acquisition reforms to give the Congress the American taxpayer and most importantly our operational forces the requisite confidence in the weapon system development process.

Mr. Chairman, in your letter of May 26, 1989, inviting me to appear before your Subcommittee you focused on several policy issues regarding Operational Test and Evaluation. Here is how I believe the system could be improved.

When the services propose a new weapon system to the Congress the proposal usually contains an "advertisement" of what the system will do--how much of an improvement it represents over existing systems, etc. I believe that it is at this time that the services should be required to provide a list of those tests that will be conducted to demonstrate the advertised capabilities. This should be viewed as a contract between the Congress and the service such that there is no misunderstanding when the full scale production decision is to be made. If for example, the service is advertising a new missile that will increase our exchange ratios with enemy aircraft by two to one, then there should be a demonstration of this capability and not simply a test to demonstrate a one-on-one engagement. I would suggest that weighting factors be assigned by the services to the list and agreed upon by the independent testers so that testing is not reduced to a binary pass/fail situation.

Development and operational test directorates should be kept completely separate. Only those interfaces that are required to provide for an orderly transition from development to operational test should be maintained. While it is appropriate for contractors to participate in development tests, actual operational tests should be limited to the operational user community. The office of the Director, Operational Test and Evaluation, should employ contractors only for range support functions, maintenance, but not in the conduct of an actual operational test. Of course, development contractors should be allowed to monitor operational tests since much can be learned about system deficiencies, corrective actions, the effects of new technology on weapon systems, etc.

The situation today, however, is that contractors who are developing test plans for the services are also supporting the test directorates under an omnibus contract and in the city of Washington where perceptions are reality, the perception of conflict of interest immediately surfaces. Accordingly, contractors who support the services should be excluded from supporting a test activity where there is an apparent conflict of interest.

Congress must appropriate funds for the development of targets that will emulate the enemy threat or the acquisition of real targets when possible. The priority of target development/acquisition is far too low within the Department of Defense and must be elevated if realistic testing is expected.

Similarly, our test ranges must be modernized in terms of instrumentation and funding for our ranges must be given a higher priority.

The linkage among development, live fire, and operational testing must be immediately delineated in terms of organization, transition, and implementation.

Mr. Chairman, you asked in your letter of May 26, 1989, for my comments on the appropriateness of hiring consultants to participate in the operational test procedures and also on the concept of low-rate production.

As a consultant to several defense companies, I believe it would be a direct conflict of interest and unethical for me to serve as a consultant to the operational test process. Even if I didn't have any defense clients I would wonder why the user community would need an outside consultant. What better expert is there than the person who possesses the training, tactics and doctrine and who will have to use the system during a time of conflict. In my opinion there is a valid time and place for consultants but the operational test and evaluation area is not it.

Concerning low-rate initial production I have observed that the services often put the Congress in a pseudo binary situation--you can do it our way or it will cost a fortune to do it your way. I often marveled at the DoD annual reclama where a congressional cut of $2 million or so in a $50 million program would increase the total program cost by 20 or 30 percent; yet later in the year the service would reprogram $10 million out of the project and tell Congress that it would have no effect on the program.

Mr. Chairman, you are fed a lot of hogwash on this whole low-rate initial production/transition from development issue. With proper planning there is no reason why enough development articles cannot be produced that would satisfy test objectives and yet provide for a smooth albeit slightly more expensive transition into procurement.

The main problem here is that the service gets committed to production regardless of the test results with the idea that the system can be fixed later. There may be a few instances where it would be prudent to go with this approach but in the majority of cases it is far better and less expensive to correct system deficiencies prior to production.

This is especially true in the special access area. In this unclassified session I cannot comment on specific programs but you know how many billions of dollars we have been committed to development programs and production options prior to even the first development--not operational test.

Mr. Chairman, I believe that I have covered all of those issues that you cited in your letter. I would like to conclude with the following observations/comments.

o The research and development process is not perfect. Nowhere in our defense history can I point to a weapon system that was developed free of technical and/or financial difficulties. If we knew how to do it right the first time we wouldn't need R&D.

o Because of the imperfect R&D process we must expect failures in test and evaluation. It is absolutely essential to evaluate the magnitude of the failure, the prospects for corrective action, and whether or not a system despite its deficiencies is still worth procuring.

o Special access programs are not being properly scrutinized by the Test and Evaluation communities.

o The Pentagon would be far better served by remembering the provisions of Article 1, Section 8, of the Constitution and recognizing that Congress is a major player and not the enemy in the defense process. It is time to reestablish mutual credibility and to work in harmony with the Congress to improve the acquisition and testing process.

o While Program Managers have been given more latitude and responsibility in the Department of Defense the system still discourages the P.M. from recommending program termination, delays, or the need for additional testing. Program Managers must be program advocates but never at the expense of truth, honesty, and integrity.

o The current adversarial mood that exists in the defense community coupled with overregulation and distrust has resulted in a process that has everyone looking over their shoulder rather than in a forward direction. Accordingly, we are taking a low risk, low investment, low capability, high paperwork approach toward weapon system development and in the long run paying much more to get less.

o It is time for Congress to review, and amend where necessary, all procurement reforms in order to obviate the continued decline of our defense industrial and technology base.

o The Development Test and Operational Test Offices in the Department of Defense should be maintained as separate directorates.

o The Office of the Director, Operational Test and Evaluation needs fewer managers and more technical personnel.

o The priority of both target development and test range improvement funding within the Department of Defense should be elevated to eliminate the argument that a system cannot be tested because the targets do not exist or that the range facilities are inadequate.

o The Congress can expect more success oriented tests on weapon systems that are about to enter procurement unless the Secretary of Defense intervenes.

Mr. Chairman, I thank you for inviting me today and I hope that I have contributed to your hearing on the matter of Test and Evaluation.

United States General Accounting Office

GAO Testimony

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Adequacy of Department of Defense Operational Test and Evaluation

Statement of
Frank C. Conahan, Assistant Comptroller General
National Security and International Affairs
Division

Before the
Subcommittee on Federal Services, Post Office
and Civil Services, Committee on Governmental
Affairs - United States Senate

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to appear before you today to discuss our work concerning Department of Defense (DOD) operational testing and evaluation (OT&E) of major weapon systems.

Since 1970, we have issued over 50 reports dealing with the adequacy of operational testing and evaluation of weapon systems to demonstrate their capability to perform their intended missions. Testing has not been comprehensive, realistic or rigorous; nor has there been sufficient oversight of the testing and evaluation function by top management in DOD.

Our work has shown that during the later years of program development, weapons have historically experienced significant cost growth, schedule slippage and performance shortfalls. Sound and independent testing is needed if systems are to avoid costly redesign and modification after production or deployment. Similarly, we cannot afford to invest large sums in programs such as Aquila and DIVAD only to have them terminated because they do not work. While many have applauded the decisions to end such programs, they should never have progressed as far as they did.

Continual trade-offs are made between doing adequate operational testing and the consequent delays that may occur in fielding a system plus the high costs associated with keeping a production line open. Such factors as urgency of the requirement and the cost of building prototypes may, in the view of decision makers, outweigh the need to identify and correct performance shortcomings identified through operational testing and evaluation. Our fundamental objective is to assure that decision makers are fully informed on the impact of starting production when (1) sufficient OT&E results are not available or (2) test results support the need to reduce risk by redesigning or modifying systems.

Today, I will discuss (1) inadequate oversight and reporting by the Office of the Director, Operational Test and Evaluation (DOT&E), (2) lack of realistic testing and adequate test resources, (3) concurrent development and production that has created an environment which is not conducive to thorough OT&E, and (4) the need to maintain OT&E independence, the evolving concept of early operational assessments and the absence of OT&E to support low-rate initial production decisions.

INADEQUATE OVERSIGHT AND REPORTING

The Congress has consistently shown a long-standing interest in the performance of major weapon systems and the adequacy and timeliness of OT&E. As early as 1971, the Congress enacted legislation requiring the Department of Defense to provide the Congress with data on the OT&E results of major weapon systems before committing major production dollars.

In 1983, Congress enacted additional legislation creating the Office of the Director of Operational Test and Evaluation (DOT&E). Prominent among the objectives of this Office were independent oversight, coordination of the military services' planning and execution of operational tests, independent evaluation of the results of operational tests, and objective reporting of test results to decision makers in the Department of Defense and the Congress.

In March 1987, we evaluated DOT&E's effectiveness in carrying out its oversight responsibilities. We reported, among other things, that DOT&E made contributions to OT&E activities, especially in the test planning area. The Office was responsible for improvement in Test and Evaluation Master Plans and detailed operational test plans. However, we identified several deficiencies in DOT&E's effectiveness in carrying out its oversight activities. Specifically:

-- DOT&E appeared to be making only limited numbers of actual on-site observations of operational tests,

-- DOT&E's analysis of operational testing was primarily based on military service test reports with little assessment of actual test results, and

-- DOT&E had not provided policy and procedural guidance or maintained reliable records on some of their principal activities.

In the official response to our report received in July 1987, DOD generally disagreed with the principal findings. We were surprised by the DOD response because we met with the Director of OT&E and his staff several times during the assignment and obtained confirmation of the accuracy of the information being developed. And, DOT&E officials acknowledged our reported findings in their comments on an advance copy of the draft report.

Recent follow-up on the current status of DOT&E efforts to resolve these problems indicate that corrective action has not been taken. For example, DOT&E has not established policy and procedures or maintained reliable records on observing tests, analyzing service test reports or preparing reports on systems prior to their entering full rate production. Also, DOT&E has not developed a formal system to document how DOT&E staff spend their time, nor do they believe one is necessary. We continue to believe that a formal system should be available to evaluate DOT&E's effectiveness in carrying out its principal activities.

In July 1988, we issued another report confirming many of the long-standing OT&E problems. The systems we reviewed included the Army's Helicopter Improvement Program and Aquila Remotely Piloted Vehicle, the Navy's Tomahawk Land Attack Missile and DDG-51 Destroyer and the Air Force's Imaging Infrared Maverick and Low Altitude Navigation and Targeting Infrared System for Night.

We evaluated (1) the methodological adequacy of OT&E under DOT&E oversight and (2) the quality of DOT&E dissemination of information to the Congress. We reported that there were significant problems and limitations in the planning, execution, realism, analysis, and reporting of OT&E by the service operational test agencies. Some of these problems and limitations were unavoidable due to time, resource, or safety constraints, although numerous others were not.

With regard to the quality of DOT&E's dissemination of information to the Congress, DOT&E reports we reviewed contained incomplete or inaccurate statements, and most contained both. We realize that some problems and limitations in OT&E cannot be avoided. However reports that omit, or do not accurately portray test results can create a misleading impression of weapon system performance; thus denying Congress complete and accurate information to make informed budgetary decisions. It can also allow systems to advance without the problems being corrected, and lead to costly redesign, modifications, and terminations.

REALISTIC TESTING AND TEST RESOURCES

We have issued numerous reports on DOD's need to improve the quantity and quality of test and evaluation resources. As early as 1975, we reported that the most troublesome problem in test resources was the lack of realistic targets. Other reports have also stressed the need for improved realism in testing and more representative test resources. Realistic testing requires test resources--such as threat simulators and aerial targets--that duplicate, to the extent possible, the characteristics of the current and projected threat.

As a result of test resource shortfalls, major weapon systems have been deployed without having fully demonstrated their capabilities under representative combat conditions.

In 1983, in a major effort evaluating test resources, we found that insufficient support for testing and test resources within the DOD weapon development community was contributing to inadequate and, in some cases, nonexistent test resources. Our report focused on two types of test resources--electronic warfare threat simulators and aerial targets. It also discussed actions necessary to improve DOD's capability to support testing.

In December 1986, we issued a report which summarized historical problems on the adequacy of OT&E that we had reported since 1970. Further, we examined six deployed weapon systems and found, among other things, that test resources were often not available nor adequate.

In March 1988, we reported concerns in planning, organizing, and sponsoring test resources including our assessment of the Navy's long-term underwater test resources plan. Generally, we found that test resources had received relatively little management attention. Also, we found the Navy's long-term underwater test resources plan should have consolidated and prioritized all proposed test resource development and acquisition programs so that the most critical test resource development programs could be supported.

OSD has begun several initiatives to improve test capabilities and bring a central focus to test resource management. A Test and Evaluation Committee, which reports to the Defense Acquisition Board, has brought a high level focus and emphasis on test resources. And through the Operational Test and Evaluation Capability Improvement Program, OSD, through DOT&E, is also addressing the problem of test realism. The Program attempts to improve operational test realism by ensuring that selected high priority weapon systems have the critical resources necessary to be properly tested in the next 2 to 3 years.

We have received congressional requests to review DOT&E's involvement in both the Capability Improvement Program and the Test and Evaluation Committee. In these efforts, the primary concern is not whether there is a need to identify and acquire test resources, but whether DOT&E's current role in this process is in consonance with its mission and charter.

As directed by the Conference Report on the Department of Defense (DOD) Appropriations Act for Fiscal Year 1989 (P.L. 100-463), we are evaluating whether the acquisition and management of resources under the Capability Improvement Program falls within the mission of DOT&E or whether it should be given to another DOD organization. We subsequently were requested to evaluate the Services' acceptance of the program, the documentation justifying the Program, whether the items being acquired are resulting in possible duplication, and the degree of coordination between DOT&E and the intelligence community.

The House Armed Services Committee has also requested that we examine DOT&E's role in similar areas, such as whether DOT&E's role as Chairman of the Test and Evaluation Committee is appropriate because of its involvement in both developmental and operational test resources.

THE IMPACT OF CONCURRENCY ON PRODUCTION DECISIONS

DOD's policy on major weapon system acquisition stresses the importance of minimizing the time to develop, produce, and deploy major systems for use by the operational forces. In a concurrent program, production is started while development is still underway and operational testing has not been completed. In a nonconcurrent program, development is usually completed before production.

Concurrency is a technique to expedite the development and production of weapon systems. Concurrency must be well planned and controlled and adequate safeguards must be built into the program to minimize the risks. At the very least, these safeguards should provide for performance of at least some OT&E before production.

A major contributor to the problems that surfaced on the B-1B bomber was the heavy reliance on concurrency: the simultaneous development and production of a weapon system in which copy after copy is produced before all the bugs are worked out. Use of concurrency to produce sophisticated new weapons is dangerous when the technology is so advanced that the demands of prudent production cannot keep pace. In June 1985, we reported that in five concurrently developed and produced weapon systems--the Air Launch Cruise Missile, B-1B bomber, Sergeant York Air Defense Gun, F/A-18 aircraft, and the AGM-88A High Speed Antiradiation Missile--DOD did not obtain OT&E results critical to assessing mission performance before production start-up, even though it was initially planned that these test results would be available before making such decisions.

In January 1989, we reported on the concurrency in the Peacekeeper Rail Garrison Missile System and our concerns over the overlap between testing, production and deployment.

Others are also concerned about concurrency. For example, in August 1988, the CBO published a study which addressed cost growth experienced in concurrent programs. Unit costs for the PATRIOT Missile, a highly concurrent program, were cited to be over 250 percent of what was originally planned.

Until concurrent programs are managed better, including adequate operational testing, DOD will continue to face the prospect of more programs that will not achieve advertised performance levels and also be subject to major cost growth.

NEED TO MAINTAIN INDEPENDENCE IN OT&E

From time to time DOT&E has attempted to reorganize or redefine the test and evaluation functions. In early 1987, we opposed a DOT&E proposal to place the test and evaluation functions within the Office of the Under Secretary of Defense for Acquisition. At that time, we also expressed concerns over DOT&E's plans to consolidate developmental and operational test functions under its purview.

In response to our March 1987 report and DOD's attempt to realign test and evaluation activities, Congress reacted by adopting legislation which stated:

> "The Director may not be assigned any responsibility for developmental test and evaluation, other than the provision of advice to officials responsible for such testing." (National Defense Authorization Act, FY 1988 and 1989, section 801)

In the Conference Report 100-446 dated November 17, 1987, the conferees agreed that responsibility for operational testing is separate and distinct from functions associated with developmental testing. The conferees further agreed that the Secretary of Defense should refrain from any realignment or new arrangement of test and evaluation activities until it could be debated by the Congress.

In September 1987, DOD attempted to redefine the test and evaluation functions. Traditionally, the portion of initial OT&E conducted during the acquisition process prior to the decision to proceed to full-rate production was accomplished using a prototype, preproduction article, or production-representative test article. The Secretary of Defense endorsed a realignment of test and evaluation activities which describe initial OT&E as a tool to provide insights about the potential operational worth of a system throughout its acquisition life. This concept could take advantage of any test results and may use simulation, modeling, and paper analysis to develop assessments. DOT&E officials stated that this definition generally describes an early operational assessment.

As of January 1989, it appears the Director, Operational Test and Evaluation has continued to realign the test and evaluation activities by requiring the use of "early operational assessments". The purpose of early operational assessments is to assess the ability of a system to satisfy operational issues and identify areas of risk by using available information. They provide a process to assure decision makers that the system is evolving toward readiness for operational test and evaluation, and that as many as possible operational effectiveness or suitability shortfalls have been identified and corrected.

In our May 8, 1989, report we pointed out, among other things, that because operational assessments rely on information from nonindependent sources, the important distinctions between actual operational test and evaluation and operational assessments can be blurred. We also pointed out that military service operational test and evaluation agencies are conducting operational assessments and have concerns that in performing such assessments, their independence may be compromised by a role that requires them to predict weapon system performance on a basis of data provided by contractors and agencies responsible for developing the weapon systems. Development and OT&E results are important in the acquisition process, but they have different purposes, use different criteria and are conducted under different conditions. Further, the OT&E agencies believe that misunderstandings may arise over the nature and extent of testing actually performed on a weapon system.

One reason operational assessments are being encouraged is that early operational testing requires the availability of hardware to test, generally a prototype. Prototypes of new weapons can be expensive and time consuming to build and often are not available prior to the full-scale development or low-rate initial production decisions.

DOD acquisition directives generally call for OT&E input at all major acquisition decision points, including full-scale development and low-rate initial production. We reported in May 1989, that OT&E was not conducted for ten full scale development decisions and was only conducted for three of ten low-rate initial production decisions. For three of the systems that have not been operationally tested, the Navy prepared operational assessments to support initial production decisions. Two of these assessments were so limited that the Navy's operational testing office could not project the systems' potential effectiveness or suitability.

Operational assessments early in the acquisition process, particularly when test hardware is not available, fill a void and offer useful information to decision makers. Our concern, however, is the tendency to rely on these assessments as a primary basis for deciding on whether to initiate or accelerate production. It should be clearly understood that these assessments cannot and should not take the place of actual OT&E before production.

The DOD Inspector General (IG) has been reviewing the adequacy of OT&E for transition into production. The DOD IG found that United States Code, Title 10, Section 2403, "Contract Guarantee" defines "mature full scale production" as the manufacture of all units of a weapon system after the initial production quantity or manufacture of the first 10 percent of the eventual production, whichever is less. DOD IG reports issued on the C-17 and SINCGARS programs illustrate the absence of OT&E, yet significant quantities had already been produced. For example, the DOD IG's application of "the 10-percent rule" to an Air Force planned purchase of 210 C-17 aircraft indicated that a production request of 40 aircraft, which is far in excess of 10 percent of 210 aircraft, represented a "de facto" full-rate production decision.

We do not know what the low-rate initial production rate should be, but we strongly support the need for having some OT&E results available early in the acquisition process before production commitments are made. We plan to explore this whole area in future work.

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This concludes my prepared testimony. We will be pleased to answer any questions you might have. Thank you.

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STATEMENT BY

DEREK J. VANDER SCHAAF, DEPUTY INSPECTOR GENERAL

DEPARTMENT OF DEFENSE

BEFORE THE

SUBCOMMITTEE ON FEDERAL SERVICES, POST OFFICE AND CIVIL SERVICE

COMMITTEE ON GOVERNMENTAL AFFAIRS

U.S. SENATE

ON

OPERATIONAL TEST AND EVALUATION

ISSUES WITHIN THE

DEPARTMENT OF DEFENSE

Mr. Chairman and Members of the Subcommittee:

I am particularly pleased to be here today to contribute to your review of two important issues--the management and contracting practices of the Office of the Director, Operational Test and Evaluation, and the adequacy of operational test and evaluation within the Department of Defense. As an overview statement, I believe that the Office of the Director, Operational Test and Evaluation should be managed and operated in such manner to ensure the integrity and independence of the office. Further, it is imperative that weapon systems receive adequate operational testing in the intended environment before large sums of money are spent or long term committments are made. I welcome the Subcommittee's interest in providing policy and oversight for these important issues.

Management and Contracting Practices

Regarding management and contracting practices, I strongly support the need for an independent Director, Operational Test and Evaluation. My previous testimony in 1983 before this Subcommittee strongly supported creation of an independent Office in OSD for operational test and evaluation. I do, however, have some concern about the management and contracting practices of the office.

Recently, we completed an investigation of alleged contracting irregularities by the Defense Test and Evaluation

Support Agency. The agency is also referred to as DTESA. The DTESA was established under the Office of the Deputy Director, Defense Research and Engineering (Test and Evaluation) to provide test and evaluation and associated support to the test and evaluation community. At the time of our investigation, the Director, DTESA, also served as the "Head of Contracting Activity" with authority to approve waivers and deviations to the requirements of the Federal Acquisition Regulation and to contractually bind the Government.

The investigation included a review of four sole-source contractual documents (three contracts and one basic ordering agreement) awarded by DTESA in support of the Director, Operational Test and Evaluation. The investigation showed that:

- a prime contractor was pressured to become a subcontractor or risk losing business;
- a contract was classified "Special Access Required," however, the contractor did not have the required clearance;
- the contracts were awarded without determination of contractor financial capability;
- contractual requirements were not documented in the contract files;
- there was a possible conflict of interest in that the contractor was preparing a master plan for an activity that the contractor was proposing to operate; and

- the contractor performed work for the Government without benefit of a contract.

In the report, the investigators recommended, in part, that the Director, Operational Test and Evaluation, and the Director, Defense Research and Engineering, consider having DTESA obtain contracting support from Kirtland Air Force Base through an Inter-Service Support Agreement. We are continuing to investigate various matters involving management and operations within OT&E, DTESA, and associated contractors.

Partly as a result of these investigations, our inspectors will also conduct a comprehensive management review of operational test and evaluation within the Office of the Secretary of Defense and the Military Departments during the first half of FY 1990. The inspection will follow-up on previously issued Inspector General, DoD, and General Accounting Office audit reports. Our inspectors will give particular emphasis to organizational relationships; testing independence; contracting policies and practices; the adequacy of mechanisms for selecting items for review by the Director, Operational Test and Evaluation; the implications of requiring live-fire testing on weapon systems; and the adequacy of management oversight.

Adequacy of Operational Test and Evaluation

Regarding the adequacy of operational test and evaluation (OT&E), it is appropriate at this point to define the term. As defined in U.S.C., Title 10, Section 138, "Operational test and evaluation means the field test, under realistic combat conditions, of any item of (or key component of) weapons, equipment, or munition for the purpose of determining the effectiveness and suitability of the weapons, equipment, or munition for use in combat by typical users; and the evaluation of the results of such tests."

In several recent audits, we identified two recurring issues regarding weapon systems acquisition and OT&E. First, there is a need to clarify what constitutes low-rate initial production and full-rate production, and, second, there is a need to clarify what is considered adequate operational testing. Both of the issues deal with DoD compliance with the operational testing and reporting requirements of U.S.C., Title 10, Section 138. A third issue, which I will address is the need for an updated mission analyses at the production milestone.

Low-Rate Initial Production versus Full-Rate Production

The DoD Manual 5000.3-M-1 defines low-rate initial production as the manufacture of a system in limited quantities to be used in OT&E and to establish a production base. Before a system is approved to proceed from low-rate initial production to full-rate production, U.S.C., Title 10, Section 138 requires that the Director, OT&E, analyze the results of weapon system OT&E and report to Congress on whether the system is suitable and effective for combat. The analysis and the report by the Director, OT&E, are not required if the system program office is requesting approval to only purchase a limited quantity of weapon systems, i.e. low-rate initial production. Thus, the need for an OT&E and reporting the results to Congress is dependent on the distinction between low-rate and full-rate production.

Neither low-rate nor full-rate production have been specifically defined in quantitative terms by either the DoD or the Congress. Several of our recent audits of major systems acquisition programs disclosed that the quantities and funding requested by the system program offices were of such a magnitude that they represented a de facto full-rate production request before the required completion of OT&E. The Military Services considered the purchase decision to be low-rate initial production, therefore, the required completion of OT&E and the reports to the Congress (as well as other required program documentation) had not been accomplished. Two of several examples are the Army Single Channel Ground and Airborne Radio System (SINCGARS) and the Air Force C-17 Cargo Aircraft Program.

SINCGARS

In March 1989, the Army requested approval from the Office of the Secretary of Defense to award the final two contract options (Options 3 and 4; each for 16,000 radios) of the SINCGARS, which would have resulted in the total quantity of 44,100 radios being contractually deliverable. We found that required operational testing was completed on the non-integrated communications security (non-ICOM) version of the radio, but not the ICOM version. Because the ICOM version of the radio represented a significant change in design, function, and operation from the non-ICOM version and 27,625 of the 44,100 radios will be the ICOM version, we recommended that operational testing of the ICOM version be completed before the award of contract Option 3.

In response to our recommendation, the Army and the Office of the Secretary of Defense stated that Option 3 was low-rate initial production and the award was proper. Without a quantified distinction between low-rate and full-rate production, both parties can make that claim. We noted, however, that through exercise of Option 3 and Option 4, the rate of production reaches a quantity of 1,375 units per month, which is the highest planned monthly rate of production. In addition, the contractor's monthly delivery rate for May 1989 was 370 units and the contractor delivered only 218 units; none of which were the ICOM version. Further, although the Army expressed confidence in the contractor producing the ICOM version, the Army plans showed that the contractor would be required to produce 2,300 ICOM versions before the first radio would be selected for operational testing. We, therefore, questioned the propriety of awarding contract Option 3 until operational testing was completed on the ICOM version of the radio and suggest that operational testing be moved up some nine months by using some of the first 2,300 radios. We are currently working with the Under Secretary of Defense for Acquisition to resolve this matter.

C-17 Aircraft

In December 1988, the Air Force requested approval from the Office of the Secretary of Defense for low-rate initial production of the C-17 Aircraft. We believe the requested quantities represented a de facto full-rate production request. The request was for approval to purchase 40 aircraft and long-lead items for an additional 29 aircraft. With a planned total buy of 210 aircraft, at the cost of $30.6 billion, the intention of the request was to commit to the production of 69 C-17 Aircraft at a cost of $10.3 billion, or 33 percent of the planned total buy, and 34 percent of the procurement costs. We believe such a commitment is a full-rate production request. We also noted that at the time of the request, the Air Force had not built and tested a prototype C-17 Aircraft. Therefore, no operational test results were provided to the Director, OT&E. In addition, by the time operational testing is completed, DoD will have made a commitment (aircraft plus long-lead items) to buy about half the fleet of aircraft. In response to our audit report, the Defense Acquisition Board approved procurement of 10 aircraft and long-lead items for an additional 10 aircraft.

We believe that implementation of the program office requests for the two acquisition programs would have resulted in a circumvention of the intent of U.S.C., Title 10, Section 138. That issue will continue to arise unless action is taken to develop a more explicit--preferably quantitative--definition of the distinction between low-rate and full-rate production. We recommend that the quantification of low-rate production be extended to constrain both the monthly or yearly rates and maximum quantities to a level consistent with quantities required to support operational testing and establish a production base. The expression of low-rate production as a percentage of the monthly or yearly rate for full-rate production and as a percent of the total acquisition quantity would remove some of the ambiguities and uncertainties in the interpretation of what constitutes low-rate production. We do not believe it is feasible to express the percentages as absolute values simply because each acquisition has a different profile and different types of products such as aircraft, ships, radios and conventional ammunition. Each system may require different criteria. However, as the total acquisition quantity increases, the percentage should decrease on a sliding scale.

Therefore, we believe it is feasible, and in the best interest of the DoD, to structure the definition of low-rate production to satisfy the requirements of operational testing and establish a production base. For example, low-rate production for a high volume program, such as SINCGARS, would be limited to a monthly rate of 50 percent of the full-rate production quantity, and the overall maximum low-rate quantity would be limited to between 5 and 10 percent of the planned total acquisition quantity. Also, the monthly production rate should be based on actual producers and not potential producers that will be brought on later in the program.

Adequacy of Testing

The issue of whether the use of operational assessments instead of operational tests constitutes adequate testing also needs to be clarified. When a production-representative prototype is not available for operational testing, the results of developmental component testing, computer simulations, and paper analyses (for example, analyses of system requirements, engineering proposals, and design specification documents) are used to assess the system. Operational assessments are usually used at the completion of the full-scale development stage in the acquisition cycle. The operational assessment provides the Office of the Secretary of Defense a means to assess the effectiveness of the system so management can make a more informed decision. Thus the use of operational assessment should be viewed as a positive and useful step in the decision making process.

However, public law requires an operational test, not an operational assessment, before the system can proceed beyond the low-rate initial production stage. For systems such as missiles, the requirement for operational testing usually can be accomplished because of the availability of production-representative prototypes. However, for low-volume, high-cost systems requiring a long production schedule, a production-representative prototype may not be available. Ships and satellites are examples of those systems. Delaying the full-rate production decision until OT&E can be performed on the production-representative prototypes would result in an unacceptably inefficient acquisition schedule with significantly increased costs and untimely deployment of the system. The Congress should change the law to recognize the use of operational assessments for low-volume, high-cost, and lengthy production process items.

SSN-21 Submarine

During a recent audit of the SSN-21 Submarine Program, the issue of operational assessments instead of operational testing was highlighted. The Navy considers the first submarine to be low-rate initial production. We agree with the Navy. However, the Navy considers the second submarine to be full-rate production with funding approval in FY 1990, which is at least 6 years before the completion of required operational testing. Further, the Navy plans to request funding approval for about half of its submarine fleet before completion of operational testing. Since the results of required operational tests will not be available in FY 1990 for the report to Congress, the Director, OT&E, could, only report to Congress on an operational assessment. The auditors concluded that the Navy acquisition plan was not in compliance with U.S.C., Title 10, Section 138, because operational testing was not going to be performed before the system proceeded to full-rate production. Both the General Counsel for the DoD, and the General Accounting Office have issued opinions on the legality of the compliance issue. Both opinions state public law requires actual testing of the submarine, not just an operational assessment.

SINCGARS (Adequacy of Testing)

We also identified systems with high-volume buys that have acquisition plans that are not in full compliance with the public law. For example, in the previous discussion of the SINCGARS program, the Army and the Office of the Secretary of Defense planned to purchase the ICOM version of the radio without required operational testing. Instead of operational tests on the ICOM version, an operational assessment was to be prepared based partly on the results of operational tests on the non-ICOM version. As I stated earlier, the ICOM version of the radio represented a significant change in design, function, and operation from the non-ICOM version. A comparison of the 2 versions shows that 8 of 15 subassemblies are changed and 2 additional subassemblies are to be added to the ICOM version for the secure communications capability. The non-ICOM version with an attached VINSON communications security device weighs 26.5 pounds, while the ICOM version will weigh 19.5 pounds. We recommended that the Office of the Secretary of Defense and the Director, OT&E, comply with the public law on completing OT&E and properly reporting the results to Congress before Option 3 of the contract is exercised.

We recognize that the use of operational assessments may be necessary for systems such as the SSN-21 Submarine, which are produced in low volume and have high unit costs and long production schedules. However, for systems such as the SINCGARS, which are produced in high volume and have moderate costs and relatively short production schedules, the use of operational assessments should not be allowed because of the availability of production-representative prototypes. Therefore, we believe that Congress should amend U.S.C., Title 10, Section 138 to authorize the use of operational assessments as an interim means for approval to proceed beyond low-rate production when production volumes are low and prototypes of new weapons are expensive and time-consuming to build. The results of the operational assessment should be considered an interim report and provided to Congress pending the production and operational test of a production-representative prototype. During the interim, the approved production quantity should be only the minimum quantity needed to perform operational testing and to keep the production line operating.

Mission Analysis

Although not identified as a recurring problem in recent audits, there is a third issue requiring clarification of policy--which is the need for mission analyses to ensure the viability of deployed systems. Defense Intelligence Agency (DIA) Regulation 55-3, "Threat Support for Major System Acquisitions," stated that the goal of DoD policy is to ensure that weapon systems undergoing development are deemed to be mission capable during their full life cycle in an operational environment. To ensure the attainment of that policy, each Military Department must prepare, for validation by DIA, a System Threat Assessment Report (STAR). The STAR must identify the threat to the system at the system's initial operational capability date and the initial operational capability date plus 10 years. The STAR is used as information for a dynamic mission analysis in which a computer simulation model is used to determine how well the system performed against the threat. Current regulations require that the STAR be updated at each acquisition milestone to reflect changes in the threat. At the production milestone, an updated STAR is required, but an updated mission analysis is not required. We believe that it would be prudent for DoD regulations to require such an updated mission analysis at the production milestone.

In reference to the SSN-21 Submarine Program, before the Office of the Secretary of Defense and the Congress make the final commitment to a program that requires at least $50 billion, I believe it would be prudent to ensure that the SSN-21 Submarine adequately meets the threat at the initial operational capability date and at the initial operational capability date plus 10 years. The Navy is in the process of performing a dynamic mission analysis at the initial operational capability date (1995) but, has refused to do an analysis beyond the initial operational capability date. Since the SSN-21 submarine may be operating for 30 years, I believe it is important that we assure ourselves that the submarines programmed for delivery beyond the initial operational capability date will be able to meet the threat for a reasonably foreseeable period beyond that date (i.e. at least 10 years).

Mr. Chairman, that concludes my prepared statement. I will be happy to answer any questions that you or the Committee may have.

DEPARTMENT OF DEFENSE

PRESENTATION TO THE GOVERNMENTAL AFFAIRS COMMITTEE

UNITED STATES SENATE

JUNE 16, 1989

SUBJECT: OPERATIONAL TEST AND EVALUATION ISSUES

STATEMENT OF: HONORABLE JOHN E. KRINGS
Director, Operational
Test and Evaluation
Department of Defense

Not for Publication Until Released
by the Governmental Affairs Committee
United States Senate

Mr. Chairman and Members of the Subcommittee; I appreciate the opportunity to meet with you today to discuss policy issues regarding operational testing.

This will be my last appearance before the Congress, but my first before the Subcommittee. I will be resigning on June 30th after serving 4 years as Director, Operational Test and Evaluation.

I understand the hearing schedule facing the body, so I will be brief. In addition to my verbal testimony, I request to submit a written, more detailed, testimony for the record. I feel I have some important perspectives on the issues you asked me to address. As the first Director, I had to organize the office, set some internal policy and provide a direction, and respond to positive and negative trends in issues such as those you've asked me to address.

In a statement to the Senate Armed Services Committee on March 7th 1985, during my confirmation as the Director, Operational Test and Evaluation, I said that; "the Director should be the advocate of the customer, who is the Soldier, the Sailor, and the Pilot, who should expect that the equipment provided is the best in the world, and that it will work effectively in combat". I also stated that: "if I were confirmed to this position, I would dedicate myself to ensuring the weapon systems being procured by the Department of Defense have been thoroughly tested and are operationally effective and suitable for combat." That dedication has been my central focus during the past four years. There was no precedent or history for our endeavors. We have been the history and it is my sincere belief that many of the initiatives will produce the intended results with maturity.

We initially saw a need to instill more discipline in the DoD test and evaluation process to ensure that the best possible job would be done within the limitations imposed by prevailing management arrangements and the less than satisfactory T&E resources and capabilities at DoD's disposal. Through the efforts of a small, independent, and dedicated staff, and with the support of the Secretary of Defense and many members of the Congress, we have enhanced self-discipline in the test communities. I appreciate the support provided by many members of the House and Senate in that effort.

In 1985, we established a series of informal meetings with the Commanders of the Service Operational Test

Agencies and major test ranges. We also established symposia and working groups for the test community to increase its awareness of the needed discipline and to improve operational test procedures. We have instituted a Test and Evaluation Executive position in each of the Services. In some instances, we had to take stringent measures with the Services, and in some instances they more willingly followed our guidance. We have provided a critical assessment of numerous systems for formal DOD acquisition milestones, as well as numerous formal and informal reports to Members of the Congress.

The quality of information available for operational evaluation has steadily improved. The first major program that we had to take a critical look at was DIVAD. The quality of information out of the developmental side was inadequate. The SECDEF asked me to oversee the final test and to provide information on the results directly to him. This established a healthy trend that still exists today where the SECDEF encourages candor about test results. The tragedy in the DIVAD was that the results of developmental testing were not used to make operational assessments early enough so that $1.8 billion was spent before a true operational evaluation of the system was made. The B-1B program is another example of early developmental testing results not being assessed for their operational implication. DOT&E was not in existence during the B1 early testing but we are here for programs such as the B2, ADATS, and AAWS-M.

Early Operational Assessments

To provide needed earlier insights to decision makers, and to provide meaningful, objective information, and enhance the visibility programs, we instituted the concept of early operational assessments (EOA's). We introduced this concept to Members of the Congress during testimony on special access programs, and received favorable reactions. This concept is particularly important in concurrent programs which proceed, or are expected to proceed into, or beyond, low-rate initial production (LRIP), before IOT&E is completed.

As we have repeatedly stated, actual field tests under realistic operational conditions provide the most valid evaluations. But one must not wait for production-representative systems, certified ready for operational testing, to make the first operational assessment of emerging system capability. This is particularly important where the Congress is approving expenditure of significant funds before the first production-representative system will be ready for operational test and evaluation.

Examples of programs that are undergoing early operational assessments -- or EOAs as we call them -- are the C-17 aircraft, SSN-21, MILSTAR program, ADATS, LRAACA, AAWS-M and Peacekeeper Rail Garrison Systems. The C-17 aircraft EOA was conducted prior to the last decision milestone and assessed the ability of the system to attain MS IIIa criteria. This EOA assessed the adequacy of the flight test schedule, adequacy of required test resources, and progress in development of user requirements and test criteria. It identified problems in system development of user requirements and test criteria. It identified problems in system development that could significantly impact the conduct of IOT&E, and assessed test results to identify programmatic voids which could affect the ability to meet user requirements. For the C-17, we specified the rate and a maximum number of aircraft to be produced during the LRIP period. We have insisted that the LRIP quantities for any program be stipulated in the test and evaluation master plan, since we have approval authority over that document. This disciplined approach is forcing the Services to correct problems in the system before full-rate production.

These are but a few examples of how we told-it-like-it-was in reporting on systems and thereby increased not only the robustness of testing, but also the reporting of facts to the decision makers in both the Department of Defense and in the Congress. In addition to the "white world" programs, we also instituted reporting on special access or "black world" programs, and instituted a special access segment of our annual report. In doing so, we have not only enhanced the understanding of those programs by the Congressional members who are cleared for such access, but also enhanced the rigor of the evaluation process for those programs.

In a November 1988 report prepared for the Office of the Under Secretary of Defense for Acquisition, the Institute for Defense Analyses commented on the DOT&E EOA initiative saying: "There has been substantial progress in implementing the concepts of earlier operational testing in the acquisition cycle, and in using the results to confirm combat effectiveness and operational utility prior to full rate production. It can be said that a true cultural change in the conduct and utilization of operational testing is being achieved." This is but one example of what others have said about our efforts. EOA's do not replace operational tests but they do assist in precluding follow-on results like the DIVAD.

The GAO stated in a recent report, "......Emphasis by the DOD's Director, OT&E, on performing operational assessments when hardware is unavailable is therefore a step forward in filling a void in the availability of operationally oriented information. We continue to be concerned, however, that operational assessments not be seen as a substitute for OT&E. Such assessments should be seen instead as a means of providing supplemental information......". We recommend that the Secretary of Defense reemphasize the desirability of performing OT&E as early as possible in the acquisition cycle as called for by DOD's acquisition directives. We also recommend that in so doing, the Secretary clarify when it is appropriate for decision makers to rely on operational assessments that may not include the operational testing of any hardware and when actual operational testing and evaluation must occur. In addressing this issue, the Secretary should assure that the independence of the Service's OT&E agencies is not compromised and that the basis for weapon system assessments is fully disclosed when the assessments are reported to Congressional and DOD decision makers."

The GAO also informed us that they would provide any information that would improve or lead to a better concept than the EOA's. To date, we have received no additional input from GAO.

In a March 1989 letter, the GAO asked the DoD General Counsel if the law precluded us from performing early operational assessments. Their April response stated that they did not believe anything in Section 138 precludes the DOT&E from conducting those early assessments. Some fault us for not providing sufficiently detailed assessments prior to testing, or assessing readiness for testing, or at completion of operational testing. Others appear critical of our initiatives on early capability assessments. Over the past four years, we have continued to steer on the path outlined in my confirmation hearings in conformity with Section 138 of Title 10 United States Code. I have been the advocate of the Soldier, Sailor, and Airman, who have a right to expect that equipment provided to them is the best it can be, and that it will work effectively in combat. Equipment that does less should not be procured.

Earlier Insights to Decision Makers

We strive to provide insights to decision makers by considering the evolving system, requirements, operational and maintenance concepts, and threats. We all must recognize that there is simply not enough money to completely test all systems under all conditions. We need affordable confidence. We have brought discipline to the test and evaluation process by maintaining open communications with the Service Staffs and the Operational Test and Evaluation Agencies. Where possible, we identify and correct problems through a direct effort with the respective Services and their Operational Test Agencies. We elevate unresolved problems to the Secretary of Defense when we are unable to resolve them through the Service secretary level. The access to the Secretary of Defense remains open as evidenced by my direct input on the B-2 within the last month. We also apprise you of unresolved issues where needed. We explain our position and provide opportunity for problem resolution. Unfortunately, there are some who feed off sensationalism of headlines and revelations of self-styled experts. That creates an emotional, rather than logical, environment in which methodical problem resolution becomes quite difficult.

Enhanced Policy Guidance and Organizational Structure

We have undertaken a comprehensive review of T&E techniques, and the DoD policy and organizations. This review resulted in a report to the Secretary of Defense. It recommended a major overhaul of the DoD's T&E organization. The proposed changes were designed to provide T&E oversight at OSD and Service levels with organizational and reporting arrangements parallel to, but independent of, the acquisition organization and process. The report recommended the establishment of a top-to-bottom institutional arrangement to:

(1) provide oversight of all T&E carried out in support of the acquisition process;

(2) assure that the Secretary of Defense, USD(A), Congress, and other decision makers have full benefit of objective T&E information and assessments at every step of the acquisition process; and

(3) provide an advocacy and utilization of an efficient and effective investment in T&E resources -- all to the end of delivering on combat effectiveness and operational suitability.
-- Or recommending funds not be expended in procuring systems that are not going to meet the needs of the operational users.

In addition, we conducted a study jointly with the Office Deputy Director Defense Research and Engineering (Test and Evaluation), in which shortfalls in our capabilities for testing space systems were identified.

These issues were briefed to the Defense Resource Board and resulted in the Deputy Secretary of Defense directing the establishment of the DoD Test and Evaluation Committee (TEC). I was appointed its Chairman.

Test resource requirements are developed and funded through the creation of an institutional mechanism that embodies both appropriate OSD agencies and the Services in a concerted managerial effort to provide reasoned decisions relating to the resourcing of adequate tests and evaluations. This mechanism is administered through the Test and Evaluation Committee -- the TEC.

The TEC coordinates policy, test facilities, test equipment, and test resource funding. The TEC does not provide the forum for program T&E assessments. For the first time, Services are coordinating test resources in a true purple tri-Service forum, independent of program system acquisition constraints. The absence of realistic threats, targets, and instrumentation is still our number one shortfall. The ADATS testing was to be conducted without a hovering helicopter phase. It was only after my personal involvement that the hovering helicopter phase was conducted.

The TEC is manifested, in part, in the form of the Operational Test and Evaluation Capability Improvement Program. That program, with membership from all Services, focuses on the near-term, short duration, high pay-off investments which will materially reduce limitations to test realism.

We have a plan to attack and satisfy these critical shortfalls which are contained within the DOT&E Capability Improvement Program.

Inadequate representation of the threat was a major problem. Initially, I had put considerable faith in the ongoing threat simulator programs to provide the threat systems for the national testing capability, but most of those simulator programs take a long time to come to fruition due to intelligence considerations. This problem is created by two factors:

(1) Determination of how much intelligence data is required to initiate threat simulator development and

(2) Difficulties of replicating Soviet operational capabilities using U. S. technology and hardware.

I have set out to correct as many limitations associated with scheduled operational tests as possible. I adopted a course of action that consisted of providing threat systems, clones, or surrogates to replicate the threat as realistically as possible. The salient issue was to provide near term critical threat systems to scheduled operational tests.

We have gone through some initial program coordination delays as a result of contracting difficulties and special access program communications restrictions. The Services have played an intensive role in the development of the budget and are in full support of the program. Execution plans have been prepared in concert with the Services. I was prepared to execute the FY 89 budget in December. However, due to Appropriation Conference report language, the funds have been withheld by the OSD Comptroller. The DoD has satisfied all of the requirements set forth in the report language and have answered all questions presented by the GAO. I am still in a position to obligate FY 89 funds in an expeditious manner consistent with DoD goals. To withhold funds any longer will jeopardize any attempt to correct deficiencies that demand action now.

The Capability Improvement Program (CIP) approach has matured significantly since its inception. It has a coordinated approach which is predictable, consistent, and directed specifically to solving test resource shortfalls related to prioritized scheduled operational tests. It allows the Services to solve their own problems and still retain the desired direction to thoroughly stress blue systems in the operational testing environment.

The CIP has been a catalyst for the exchange of ideas between OSD and the Services. The FY 90/91 budget was developed and coordinated with the Services within the CIP framework. It represents quantifiable solutions to scheduled operational test needs. Solutions to problems that exist today will be solved near-term, not five or ten years from now.

CIP plans have been developed that demonstrate my intent to execute the budget faithfully as presented to Congress. Lead Services have been identified for the execution of projects in the budget.

The Services have presented 92 projects for the FY 90/91 budget which are required for scheduled operational tests to overcome serious limitations in test resources. Total demand for resources exceeded what could reasonably be expected under a constrained budget environment. A prioritization process has insured that the highest return investments would be satisfied in the initial submission.

These are not requests for gold plated capabilities. They are requests for the bare bones which are needed to solve the most pressing problems in operational testing. These involve interoperability of equipment, instrumentation, and threat systems. My budget addresses all of these concerns and focuses our efforts on the most time critical issues.

My budget is designed to continue the program I began in FY 88 to incorporate realism, force-on-force engagements, integration of red and blue forces, valid end-game solutions and survivability determination. It was a program that initially addressed only air-to-air and air-to-ground environments. It now includes ground-to-ground and sea-to-sea and provides support for test planning and exercises. It also establishes the Joint Mobile Operational Test Force (JMOTF) which provides resources to insure operational tests are conducted realistically. The JMOTF concept was briefed and coordinated with the Services and has their support. The Services participate in a corporate body, which I chair, to determine the prioritized utilization of JMOTF assets.

Given the availability of test resources, the Services have done a commendable job of testing most systems' operational effectiveness and suitability. I believe you understand that DOT&E does not conduct actual testing. This testing is performed by the DoD Component's Operational Test and Evaluation Agencies or other test organizations within the DoD Components. They must still do a better job of training their testing personnel. They need to allow more time for testing, and testing should be more carefully scheduled in the acquisition cycle. I think the Services must continue to improve documenting of lessons learned, the use of models and simulations for T&E, and overall test and evaluation techniques.

ACCESS

Good testing is useless if the information goes nowhere. Over my tenure, operational evaluations have been guaranteed to the decision makers by putting me on the Defense Resources Board and Defense Acquisition Board. This has led to more access than ever before.

Congress has also benefited as evidenced by the fact that the number of programs which the DOt&E certification has been requested has grown exponentially. OT&E information gets to decision makers more regularly and completely than ever before through the DRB, DAB, and Congressional reports.

The Members of Congress and the Secretary of Defense have asked for much information on B-1 before OT. Our FY 85 annual report advised you that limited capabilities achieved by the Initial Operational Capability date would fall short of those identified in the B-1B program management plan. Each year we addressed the progress and the problems. We alerted the Senior DoD Management -- as well as the Congress -- to difficulties with the electronic countermeasures, aft-bay release, engine anti-ice, the instrument landing system, and other systems. In addition to our written reports, we provided additional insights during dialogues with individual members of the Congress.

We are on record as advising the Secretary that changes to the B-2 would be needed to preclude that aircraft from replicating the experience of the B-1B. Last year we developed, and presented in classified testimony, specific assessment criteria to judge the evolving capability of that aircraft. Security classifications preclude detailed discussion in this forum. However, those initial steps in progress operationally-oriented assessments provide a benchmark against which progress over the past year may be judged.

DETERMINATION

There have been attempts in the past to establish an "independent" OT&E. They all failed for one reason or another. Our survival as a viable and controversial organization attests to our will to see this mission through with the continued interest and support of the Congress. With the support of the Secretary of Defense, we have been able to increase the size of the office, but we have elected to remain relatively small and obtain specific technical knowledge and expertise by contracting for them when required.

We have challenged "Empires" that have powerful constituencies. An example of this is the test instrumentation community. Everyone wanted their own radar chamber, but as a result of our management controls we have convinced them to share available resources rather than each Service owning its own. Another example is that we have challenged the threat simulator development and the foreign materiel acquisition. It costs a lot of money to build threat simulators, and we may be able to buy the real thing cheaper through foreign commercial procurements. Commercial procurements sometimes do not require the same degree of security protection as assets procured through intelligence sources. Of course, doing business this way means someone loses business. The Secretary of Defense and Deputy Secretary of Defense have assisted in developing a plan to provide adequate security of intelligence information but still provide maximum possible flexibility of asset utilization for operational testing. There are improvements yet to be made. The Services sometimes still try to avoid adequate testing. Their excuse is often that instrumentation or targets are not available or that the threat cannot be represented. The CIP program is designed to overcome this reluctance.

Another factor that hinders our attempts in forcing execution of adequate testing is specific legislation that restricts our operation. Some examples are: ADATS - when Congressional language said buy now and test later; AHIP -

where the test design was specified; and the Improved Recovery Vehicle - where 21 Senators and Representatives signed a letter requesting a go-ahead despite negative test results.

Our continued opposition to these special interest communities within and external to the DOD attest to our independence. However, when the Congress approves language that cuts our funds for test capability improvements, it undercuts our position with these groups.

Test Support Activities

There is some concern about the use of contractors and civilian contract specialists in support of operational tests. Civilian specialists are normally used when personnel with special skills are required and the test agency or the support contractors do not have these persons on their staffs.

The DOT&E and the Service's Operational Test and Evaluation Agencies cannot maintain the required technical staffs to assess the adequacy of test and evaluation, and the effectiveness and suitability of all systems currently in the acquisition process. Access to top level technical personnel is through well staffed support agencies. DOT&E and DDDR&E(T&E) have competitively selected two new prime support contractors, who, with the availability of a stable of new subcontractors, can provide the needed breadth and depth of technical expertise on an "on-call" basis. This supports our minimal OSD T&E staffs in providing technical analyses to enhance decision making capabilities. It does not usurp our personal and independent final evaluations and judgments. This support contract has been structured to provide the needed expertise while precluding any adverse impact from potential conflict of interest issues. In addition to civilian expertise, we also have the availability of the professional staff of the Institute for Defense Analyses which is called upon in those instances where extremely complicated long-term problems necessitate longer term PHd-level studies of a more academic or theoretical nature.

There are basically two types of OT&E support contractors currently used by the DOT&E and the Operational Test Agencies (OTAs). The first provides analytical support to the OTA and assists in the evaluation of the test design. They assess the level and quality of test resources, comment on the adequacy of test plans and test and evaluation master plans, assist the OTAs in observing the test execution, and assess the adequacy of data collection, reduction, and reporting.

The second type of contractor support used by the OTAs provides on-test-site support to the test organization. Some of the types of support that they provide are: running test range; setting-up, maintaining, operating, and breaking-down instrumentation; maintaining and operating targets and threat systems; performing data collection and high level data reduction; and disassembling and storing test equipment. I would like to stress that on-site contractors do not normally assist in the evaluation process. We do not involve system contractors -- the designers and manufacturers of the system being tested -- in our evaluations of operational capability.

A report prepared for the Under Secretary of Defense for Acquisition by the Institute for Defense Analyses confirms that we were ahead of the Packard Commission:

> The Commission emphasized the need to test weapon prototypes in order to obtain valid data on

> operational characteristics. To a large extent, the Packard proposals in the realm of testing were already being implemented when the Report was published. The independent Operational Test and Evaluation Directorate had been established as a result of earlier legislation. Since that time there has been substantial progress in implementing the concepts of earlier operational testing in the acquisition cycle, and in using the results to confirm combat effectiveness and operational utility prior to full-rate production.
>
> The professional staff of the new Directorate has virtually doubled (from 16 to 30) since early 1986, and at all levels of the DoD acquisition organization there is evidence that its mandate from the Congress is being implemented. It can be said that a true cultural change in the conduct and utilization of operational testing is being achieved. Examples include testing in such programs as SADARM, Rail Garrison, Peacekeeper, and Forward Area Air Defense Non-line of Sight Program.
>
> The necessary institutional machinery has been put in place, and the authority of the Director for Operational Test and Evaluation as the DoD point man has been established, recognized, and accepted by the Services. The remaining question relates to the quality of the tests being accomplished: with limitation in test resources (especially test articles, test facilities, and test instrumentation) and the inherent inability to fully replicate the combat environments, how valid are the test results rendered at the acquisition decision milestones?"

Last August, I reported to the Deputy Secretary of Defense that problems with regard to suitability, in the AMRAAM Program, convinced me that a decision to commit long lead funds for high rate production was not warranted. Although the missile had demonstrated many of its basic capabilities, improvements were still needed before it entered full-rate production. Last September, I reported to the Secretary that my assessment supported a reduction in the quantity of missiles in Lot III, FY 89 production. Those recommendations were also provided to the Congress. After my recommendations, the AMRAAM was constrained to limited production for another year. This provided time to fix problems, reduce risk in the future production of the system, and precluded high production quantities of a system that was not as good as it could have been.

Another illustration concerns the Navy Landing Craft, Air Cushion (LCAC). As a result of our assessments, I reported in the FY 85 Annual Report that because of basic engineering problems, LCAC was not operationally suitable. As a result of this effort, production and fielding were not approved. In the FY 86 Annual Report, I informed the Congress that the next test phase indicated LCAC was potentially operationally suitable, and I recommended supporting limited production and limited fleet introduction. Furthermore, I recommended that the production rate be held to a minimum until additional operational testing addressed outstanding operational issues. Our assessments indicated, and we reported in the FY 87 Annual Report and June 1987 Beyond-LRIP Report to the Secretary and the Congress, that LCAC now demonstrated an operationally effective capability. I also told you LCAC was generally operationally suitable for use, except for shipboard spare parts deficiencies. The results of our activities on LCAC represent many dollars of added value to the system because problems were identified and resolved prior to production.

We also have initiated efforts to instill a discipline in the acquisition of major automated information systems. For example, with the Composite Health Care System, we placed a medical doctor, a Navy Captain, on our staff to oversee the program. This resulted in heightened awareness by the medical community and resulted in direct oversight by the three Surgeons General of the Military Services. Additionally, test sites will be established in small to very large hospitals with close monitorship by the medical communities.

Low-Rate Initial Production

In evaluating low-rate initial production quantities, one must consider the ability and willingness of subcontractors to tool-up and produce the quantities and quality of sub-components required to produce a system. This is very important in the ability of the prime contractor to provide full-rate production systems. Due to the nature of business, companies are not often willing to invest the capital required to tool-up and produce the small quantities, of sufficient quality, which are required simply for testing. The establishment of the production base must be considered.

Low-rate initial production is: "production of a system in limited quantities to be used in operational test and evaluation, for verification of production engineering and design maturity, and to establish a production base prior to a decision to proceed with production." For the C-17 aircraft the maximum LRIP quantity is established at 42 aircraft. In such programs, early and progressive operational assessments are necessary -- using whatever information -- developmental or operational -- which may be available. We do not become involved in the developmental activities during our EOAs, but believe it proper to consider results of developmental testing in forming our operational assessment.

As stated in my last Annual Report to the Congress, the beyond low-rate initial production report is one of the most important products of this office. Last year, we submitted ten B-LRIP reports to the Secretary of Defense, Under Secretary of Defense for Acquisition, and the Congress. These reports provided our assessment of the adequacy of test planning, execution, and reporting, as well as our assessment of the system's operational effectiveness and suitability.

We Advise -- Others Decide

We note that while it appears to be the sense of the Congress that operational testing precedes system procurement, we also realize it is sometimes necessary to make production decisions despite the test outcome. Illustrations of this would include the MH-53E mentioned below. At times, the Congress has indicated to the Department what they thought the outcome of a test was indicating. They have urged procurement of systems which the Department had decided not to procure because of test results. An example of this is in a recent letter to the current Secretary of Defense, signed by twenty-one members of the Congress, stating their impression of satisfactory system capability, and urging procurement of a system which did not meet requirements.

In addition to the major acquisition programs which are subject to our evaluation by virtue of their being major acquisition programs, we have added many non-major programs and selected foreign weapons evaluation projects to our oversight list in an effort to instill discipline and rigor into the entire DoD acquisition system. an illustration of a non-major program is the MH-53E helicopter. As a result of our assessment, we reported to you in May 1988, that the MH-53E was only marginally effective and not operationally suitable. After being provided this information, the Congress concurred with the Navy decision to proceed with production.

Our Processes Recognized and Adopted by Services

We have repeatedly stated that progress toward the thresholds must be assessed continually throughout a program, and that performance-based progress provides a positive incentive for meeting requirements by tying program decisions and funding to achievement. We were gratified to note this being incorporated into Service philosophy. An example is the Air Force, October 1987 publication entitled "R&M 2000 process, heavily emphasized performance-based progress." In that document, they relate how the LANTIRN program was restructured to include interim low-rate production decision points (LRIP #1, LRIP #2, etc.) based on meeting the objectives of reliability growth. The contractor was not allowed to proceed to the next phase of production for the LANTIRN Navigation Pod until the thresholds were met, with reliability then going significantly above the planned growth. Only after reliability growth continued was the program allowed to proceed into full-rate production. We were most gratified to note that document included the statement that: "funding should be tied to performance, not the calendar." This is another example of where the discipline we are trying to instill has resulted in positive benefit to the fighting men and women of our nation.

Direct Dialog is Productive

It is easy to criticize. It is more difficult to ensure that criticism is constructive. Constructive criticism is what we provide to the OSD and DoD Component staffs, Service Test Agencies, and developers of major weapon systems. When we have done so, we do not make it a matter of public record nor provide headline-making disclosures as some others choose to do. We do not attempt to second-guess the conclusions of the Congress or their accounting office. We in fact devote considerable time and effort in attempting to educate some members of the accounting office and respond to their draft reports. A few of those reports may have provided useful insights. However, the headline-grabbing one-upmanship approach is unnecessary and counterproductive. Instances of inaccurate so-called "facts" and the resulting invalid conclusions make life difficult.

We do appreciate the support of many members of the Congress over the past four years and have often been told that our written reports and one-on-one discussions have been most useful to them. We would urge that the next Director, Operational Test and Evaluation be afforded a relationship such as we have fostered within the Department and with the DoD acquisition community.

My final words to you in closing are those I would pass on to my successor.

The goal in establishing this office was noble: that of providing an independent voice to insure quality weapons for our Service members. The price of independence is a constant attack from those who would leave you independent from all but them.

We have seen much progress, therefore the goal is attainable.

The challenge is to do better in insuring high quality, honest testing to provide better systems to our soldiers, sailors and airmen. To achieve that goal, my successor will have to do better than I did in explaining our story to you because without your understanding and support, the accomplishment of that mission will not be possible.

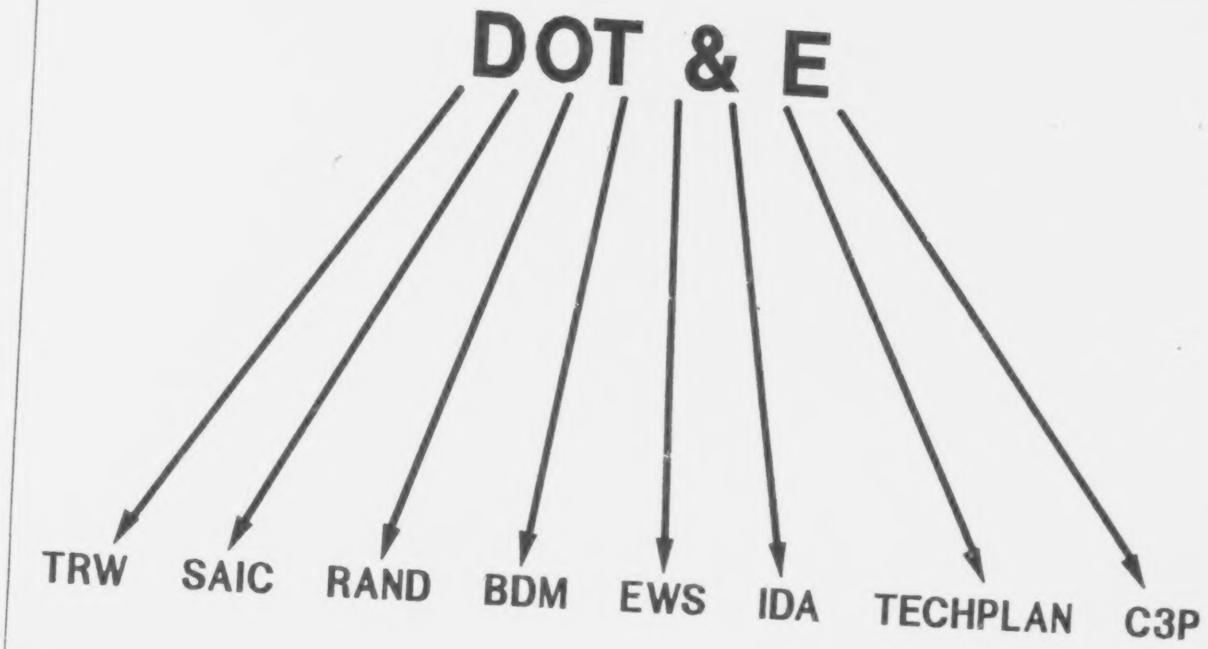
CHARTS REFERRED TO THROUGHOUT HEARING BY SENATOR PRYOR

DOT&E Contractors

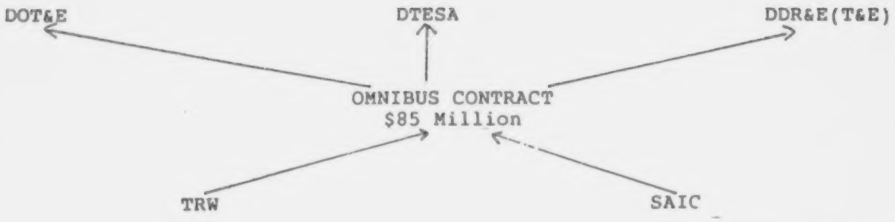
TRW and SAIC have worked in teams on DoD contracts
with all top ten defense contractors:

McDonnell Douglas
General Dynamics
General Electric
Lockheed
General Motors
Raytheon
Martin Marietta
Boeing
United Technology Corporation
Grumman

Contractor Involvement in Testing

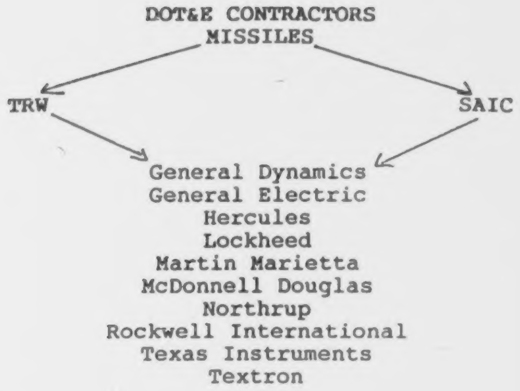


DOT & E
TRW
SAIC
RAND
BDM
EWS
IDA
TECHPLAN
C3P


DOT&E
DTESA
DDR&E(T&E)
OMNIBUS CONTRACT
$85 Million
TRW
SAIC

ORI
Quadelta, Inc.
SRI International
Computer Sciences Corp.
ARCATA Assoc.
Science & Engineering Assoc
Sigma Plus, Inc.
SRS
Syscon Corp.

GE Government Services
Advanced Science
Electrospace Systems
DCS Corp.



DOT&E CONTRACTORS
MISSILES

TRW
SAIC

General Dynamics
General Electric
Hercules
Lockheed
Martin Marietta
McDonnell Douglas
Northrup
Rockwell International
Texas Instruments
Textron

TRW & SAIC have worked with 10 of the top 15 missile contractors who corner 45% of the market share in missiles

Executive Summary

* DOT&E weapons testing oversight has been disappointing. GAO has found: limited number of on-site test observations, inaccurate or incomplete statements to Congress, favorable test assessments not supported by evidence, and poor resource management. (p. 5)

* The 1983 DOT&E law prohibits the merging of operational testing and developmental testing to avoid "the student grading his own final exam." Congress has passed legislation to stop efforts by DOT&E since 1986 to expand its jurisdiction to include parts of developmental testing. (p. 3-5)

* The appropriateness of DOT&E involvement in certain activities and other DOD entities, are currently the subject of GAO review and Congressional scutiny and in one case has resulted in the "freezing" of a $59 million DOT&E funding account. (p. 6)

Contracting (p. 9):

* DOT&E relies too heavily on contractors and DOT&E contractors perform governmental functions ($11 million per year).

* Lax contract oversight by DOT&E was found to have apparently led to prohibited "directed" subcontracting. (p. 12).

* Through shared contracts and contractors, DOT&E appears to have contractually merged some aspects of operational and developmental testing. (p. 24)

* Independent testing may be compromised by the extensive use of contractors with potential conflicts of interest that perform many aspects of testing oversight and policy making.(p. 19)

* $85 million TRW and SAIC contract with DOT&E is questioned due to the companies' involvement in weapons production, research and development. (p. 22-23)

* Contractors were found to be involved in the review of test plans, test observation and test evaluation, for the B-1B bomber, the MX missile, the MK 48 torpedo, the BIGEYE bomb, the Cruise Missile, "SDI", and the ASAT weapon. (p. 14-15)

* Contractors are involved in DOT&E policy and procedures, including developing test methodologies, passing scores and weighting systems, identifying the role of DOT&E in the acquisition system, and analyzing and reporting on GAO and other reports on DOT&E. (p. 15-16)

* DOT&E, through its contract office, has become involved in a questionable contract situation with a company hired to purchase, operate and maintain Soviet and other foreign military equipment for DOT&E. (p. 25)

REPORT TO THE CHAIRMAN OF THE FEDERAL SERVICES SUBCOMMITTEE BY THE MAJORITY STAFF

THE OFFICE OF THE DIRECTOR OF OPERATIONAL TEST AND EVALUATION AND ITS USE OF CONTRACTORS AND CONSULTANTS

In July of 1988, at the direction of Senator David Pryor, Chairman of the Subcommittee on Federal Services of the Governmental Affairs Committee, the subcommittee majority staff began reviewing DOT&E's use of contractors and consultants. The majority staff also began reviewing questions that have been raised regarding the implementation of the 1983 law that established the office of the Director of Operational Test and Evaluation (DOT&E), questions that focus on the adequacy of testing oversight by the office, and organizational changes which have been made to the office since its inception.

The review discovered contracting activities that undercut effective and independent testing and call into question the effectiveness of DOT&E's contract oversight. Subcommittee concerns include the massive use of private contractors and consultants to perform DOT&E tasks, potential contractor conflicts of interest, lax contracting oversight, and questionable DOT&E staff activities relating to the hiring of subcontractors.

I. Legislative History:

> "Operational test and evaluation means the field test, under realistic combat condition, of any item or key component of weapons...for use in combat by typical military users."
>
> Section 138(a), Title 10, United States Code

Congress created the independent Office of the Director of Operational Test and Evaluation (DOT&E) because of concern that weapons were not being realistically and adequately tested by the military before production was begun and that policy makers were receiving inadequate information on the weapons tests and their results. Poor testing caused cost overruns and the fielding of flawed and ineffective weapons.

The Governmental Affairs Committee held a hearing on the need to establish DOT&E on June 23, 1983. Legislation introduced by Senators Pryor, Roth, and Kassebaum passed in the Senate on July 14, 1983, by a 91-5 margin. Before the bill's passage, Senator Pryor stated on the Senate floor, "the independent Office of Operational Testing will be responsible for monitoring and passing judgement -- independent judgement -- on new weapons long before they reach production..."

DOT&E was given the responsibility to oversee military service operational testing and evaluate test results. It was also given the power to halt production of any weapon that failed field tests.

In order to be independent, DOT&E was created to be absolutely separate from the military service testing organizations and from all DOD research and development entities. Most importantly, operational testing, performed under simulated battle conditions, was to be completely divorced from "developmental testing," which is performed during the research and development stages of a weapon's development.

Sponsors of the law believed that ties to the weapons developers, both military and private, who are often biased advocates of a weapon, would compromise operational testing objectivity. Senator Pryor said that such ties would be like "asking students to grade their own final exam paper."

After passage of the DOT&E legislation, the Reagan Administration seemed reluctant to staff the new testing office and did not nominate a Director until April 1985, 18 months after enactment. The nominee was confirmed by the Senate, 73-18, over the objections of some who questioned the nominee's independence due to his 29 years of work for McDonnell Douglas Corporation.

II. Policy Implementation, 1986-1988:

DOT&E has been afflicted by Administration disinterest; the confirmation battle over the Director; understaffing; efforts by DOT&E to expand its jurisdiction to include developmental testing and other areas; and General Accounting Office and DoD Inspector General reports of inadequate testing, management, and incomplete reporting to Congress by DOT&E.

In 1986, DOT&E expressed interest in assuming responsibility for some developmental testing, which functionally resides under the Undersecretary for Acquisition in the Office of the Deputy Director of Defense Research and Engineering (DDDR&E). The 1983 legislation contemplated such a merger and expressly prohibited it out of concern for continued operational testing independence and objectivity. Congress reaffirmed its intent regarding the separation of testing functions in the Defense Acquisition Improvement Act of 1986, Public Law 99-661.

Nonetheless, in 1987, a plan was approved by the Defense Secretary to merge the functions of developmental testing into the DOT&E office. In light of original Congressional intent and the 1986 provision, the Congressional Research Service American Law Division questioned the legality of the planned action.

The Undersecretary for Acquisition at the time, Richard Godwin, opposed the merging of testing functions in an August, 1987, memo to DOT&E, saying, it was "not consistent with our agreements, proposes consolidation beyond that which I feel is reasonable and, of course, is contrary to existing legislation."[1] A memo to Undersecretary Godwin's successor, and then nominee, Robert Costello, from the deputy of DOT&E in October 1987, outlined a plan to circumvent Congressional intent regarding the proposed merger by "refrain(ing) from formal organizational changes until the (FY88 Defense Authorization Act) conference report is written and filed."[2] Congress responded in the FY88 Defense Authorization Act with a strict prohibition on the merging of operational and developmental testing.

Also in March of 1987, the General Accounting Office (GAO) criticized DOT&E for making a limited number of on-site observations of tests; relying on military service test reports rather than making independent judgements; and its lack of management control regarding DOT&E activities.[3]

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[1] See Appendix I

[2] See Appendix II

GAO also stated that DOT&E was understaffed. DOT&E indicated that it needed 40 staff people but had only 16 at that time. Today there are roughly 50 DOT&E staff.

1988 Report on Testing Quality:

At the direction of Congress, GAO investigated DOT&E's oversight of the testing of six major weapons systems.[4] GAO found serious problems with the test realism, execution, and analysis as conducted by the testing services and approved by DOT&E and that DOT&E did not report the problems to Congress:

"Each of the DOT&E reports to Congress we reviewed contained incomplete or inaccurate statements, and most contained both... favorable overall assessments of testing and system effectiveness were not supported by evidence."

GAO's examples of unrealistic testing on the AHIP helicopter, the Maverick missile, the LANTIRN, the Aquila drone, the Tomahawk cruise missile, and the Aegis destroyer are contained in the Appendices of the GAO report.

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[3] United States General Accounting Office, Testing Oversight: Operational Test and Evaluation Oversight: Improving but More is Needed, March 1987, GAO/NSIAD-87-108BR

[4] United States General Accounting Office, Weapons Testing: Quality of DoD Operational Testing and Reporting, July 1988, GAO/PEMD-88-32BR

III. DOT&E Organizational Issues

Some observers, such as the Military Reform Caucus, suggest that DOT&E has not focused sufficient energy on operational testing oversight because it has been overly occupied with expanding its responsibilities, including control over developmental testing (DT). They further suggest that although such an expansion has been halted by Congress, it has been continued at an administrative level.

An organizational review indicates that DOT&E has become involved in a number of powerful DOD entities and has become associated with DT in a number of respects.

A. Defense Acquisition Board and the Test and Evaluation Committee

Concern has been raised by the House Armed Services Committee (HASC) regarding the appropriateness of DOT&E's involvement in the Test and Evaluation Committee (TEC). The TEC is part of the Defense Acquisition Board (DAB), a powerful organization that controls the DoD acquisition process. The TEC was established in September 1987 to facilitate accomplishment of responsibilities and functions assigned to the Undersecretary of Defense for Acquisition in the test and evaluation area. The heavy involvement of this committee in the DT area has led some to question the appropriateness of DOT&E involvement. DOT&E is directed by law to remain independent from all DOD research and development entities.

The Director of the operational testing office, in fact, serves as the Chairman of the TEC and is a member of six other

DAB committees. The Vice Chairman of the TEC is the head of developmental test and evaluation. The remainder of the committee is made up of military service representatives.

DOT&E suggests that the TEC is valuable because it brings DoD-wide testing resource needs together for greater visibility. However, in view of the provisions in law relating to DOT&E separation from developmental testing, the HASC has asked GAO to rule on the legality of DOT&E's membership in the TEC. Staff review of the contract files (see Contract Review section) found that a contractor had been tasked by DOT&E to perform support functions for the TEC, responsibilities that included developing agendas and policy issues and preparing briefing materials and reports on meetings.

B. Defense Test and Evaluation Support Agency

The Defense Test and Evaluation Support Agency (DTESA) is organizationally under the test and evaluation office (T&E) of DDDR&E. DTESA, which was created in 1986, was chartered to provide support to test and evaluation functions in DOD and other agencies. It has served as the contracting office for developmental test needs. DTESA has recently become the primary contracting office for DOT&E as well. Concerns have been raised that sharing a contract office could lead to a blurring of the lines between operational and developmental test offices.

In fact, a recent "omnibus" DOT&E support contract awarded by DTESA, discussed in the Contract Review section below, will serve both operational and developmental test purposes.

C. Capabilities Improvement Program

The Capabilities Improvement Program (CIP) was initiated by DOT&E to purchase materials to improve testing abilities and hardware for weapons systems. A primary element of the CIP is known as the Joint Mobile Operational Test Force (MOTF), the purpose of which is to supplement threat equipment at test sites and training areas. The threat equipment includes non-United States weapons systems. Congress provided DOT&E $59 million for the CIP in FY88.

One aspect of the CIP/JMOTF that has been the focus of controversy and an Inspector General investigation, is the contractual relationship between DOT&E and a small company called C3P, which has procured MiG aircraft and other threat equipment for the JMOTF program. C3P is discussed further in the Contract Review section.

Due to concerns about the JMOTF and that the CIP duplicated other DoD programs, the House initially recommended zero funding for the CIP in FY89, Congress agreed to another $59 million in FY89 but fenced obligation of the funds pending two certifications:

1) 30 days must elapse after the submission of a detailed description of the items to be purchased and the Secretary of Defense must certify that a similar capability is not currently in use in DOD; and
2) GAO must certify that the CIP is within the scope of DOT&E's mission and is appropriate for DOT&E to pursue.

The Secretary's certification has indicated that there is no "unnecessary" duplication. GAO action is still pending.

IV. Review of DOT&E Contracting

The 1983 statute makes it clear that contractors are prohibited from involvement in conducting operational testing. The statute reads in part:

> In the case of a major defense acquisition program, no person employed by the contractor for the system being tested may be involved in the conduct of the operational test and evaluation...
> Section 2366(b)(2), Title 10, United States Code

This barrier is intended to preclude the contractor that developed the system from being able to influence the operational test of the system. The obvious issue is one of objectivity.

The General Accounting Office (GAO) has reported that this barrier has been breached. In July 1988, GAO stated:

> The prevailing problem for support personnel was some level of contractor involvement in the support of the system...although this contractor support would not be available in the field. Contractor involvement in OT&E is prohibited by the Fiscal Year 1987 National Defense Authorization Act passed in November 1988. (cited above) ...when the DOT&E director was presented with the case of an earlier test in which the system contractor actively participated in the test operations, he testified that DOT&E would ensure that this would not happen again. However, it did happen again in this instance, despite the fact that DOT&E personnel and their consultants conducted on-site monitoring of the test.[5]

This type of direct contractor involvement in testing their own systems clearly contradicts the intent of Congress in establishing DOT&E. If the present statute is not clear enough on this point, the Subcommittee may need to consider improving the language to make it even clearer that contractors should not be involved in testing their own systems.

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[5] GAO/PEMD-88-32BR

The Subcommittee examination focused on contractors who provide direct support to DOT&E by assessing and monitoring the operational testing. DOT&E's use of contractors to monitor testing is not addressed in the 1983 statute. However, from 1985 to 1988, DOT&E has spent over $37 million on contractor support services. The services range from reviewing and evaluating DOT&E policy and procedures to visiting test sites on behalf of DOT&E. DOT&E use of contractors raises a number of questions.

A. DOT&E Contract Management

DOT&E does not directly administer its own contracts. At least three other DoD offices provide contract administration support.[6] DOT&E personnel serve as Contract Office Technical Representatives (COTR). This raises questions about how DOT&E is able to monitor contractor performance if they do not manage their own contracts. This decentralized approach also raises concerns about DOT&E internal controls.

The Subcommittee requested all DOT&E contract information. The following was provided:

Institute for Defense Analysis, FY84 through FY88, $17.3 million for research and analysis; includes reviews of individual test programs.

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[6] DOT&E uses Defense Test and Evaluation Support Agency (DTESA); Army Missile and Space Intelligence Center (MSIC); and Defense Supply Service-Washington (DSSW).

BDM Corporation, April 1985 through 1988, $3.1 million for research and analysis; includes reviews of individual programs. Test programs were reviewed to assist DOT&E in the evaluation of the adequacy of Service test plans.

BDM Corporation, December 1987 through present, $3.8 million. A bridge contract between the original BDM contract and the omnibus contract that DOT&E began using in March, 1989.

Electronic Warfare Associates, October 1985 through 1989, two contracts: $2.7 million and $5.3 million for research and analysis of the ability of U.S. weapons systems to defeat, penetrate, or overcome the perceived threat.

RAND, March 1988, $175,000 to develop strategy and associated procedures for assessing the degree to which progress is being made toward achieving the desired level of operational capability and suitability in the areas for which DOT&E has oversight responsibilities.

TECHPLAN, July 1988, $103,000, to conduct an analysis of the role OT&E should play in the Foreign Weapons Evaluation and NATO Comparative Test programs.

Omnibus Contract, TRW, Inc and Science Applications International Corporation, awarded March 1989, total award of $85 million. An omnibus contract intended to provide technical support to test and evaluation responsibilities within the Office of the Secretary of Defense and functions assigned to the Office of the Deputy Director of Defense Research and Engineering for Test and Evaluation (DDR&E), OT&E, and DTESA. Sixty to seventy percent of the work will be in support of DDR&E and OT&E; ten percent will given support to DTESA. The remaining percentage will be used by any one of the three organizations and will be performed at various DOD test facilities. The contractors are to provide technical support across the full spectrum of test and evaluation activity.[7]

1. Example

DOT&E cited the TECHPLAN contract as one of its support contracts. However, when Subcommittee staff checked with DTESA, the contracting office, for further details, the staff was informed that the TECHPLAN contract had never been used by DOT&E. Furthermore, DTESA cited another TECHPLAN contract which had been used by DOT&E and which DOT&E had failed to include on the list of contracts that had been provided to the subcommittee. The Subcommittee staff regards this as a symptom of DOT&E's lack of internal controls.

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[7] Subcommittee staff independently learned of four other contracts awarded to C3P, contracts which will be discussed below.

2. Example

Another important contract management problem is DOT&E's practice of directing a prime contractor to use a particular subcontractor. Although DOT&E does not have a contracting office, they do act as a COTR (Contract Office Technical Representatives) to monitor DOT&E contracts. During a visit by Subcommittee staff to DOT&E in May, a DOT&E COTR informed the staff that when DOT&E decides it wants a certain company to perform a particular project, they simply tell one of their contractors to hire the company as a subcontractor. This procedure subverts the government procurement system by avoiding any competitive procedures and can be construed as illegal behavior.

In addition, according to the contract file maintained by DTESA, the DOT&E COTR had been warned about this type of activity only twelve days prior to the staff visit. The warning came from the General Counsel of the Defense Test and Evaluation and Support Agency (DTESA). The rebuke had come during an incident involving a request by the DOT&E COTR to hire a company called ITAC. DTESA informed the COTR that the omnibus contract with TRW and SAIC was now in place and those companies would have to be used. The DOT&E COTR then asked that the omnibus contractors be instructed to use ITAC as a subcontractor.

The DTESA General Counsel informed the COTR of the problems involved in directed subcontracting and stated that "he didn't want to hear this" in response to a suggestion by the COTR that there be a "gentleman's agreement" to have ITAC hired as a sub. The General Counsel further stated in a memo to the contract file that "we should keep in mind that ITAC was a competing contractor on the omnibus and they did not receive an award. Any work within the scope of the omnibus must go to SAIC or TRW."

The DOT&E COTR continued to press the matter and had the Deputy Director of Resources and Administration contact DTESA. DOT&E felt that the omnibus contractor suggested by DTESA, which had been SAIC, had a conflict of interest regarding the particular piece of work that needed to be done, and felt strongly that the work should go to ITAC.

The subcommittee staff is very concerned that DOT&E does not fully understand the requirements of competition in contracting statutes and does not see the problems inherent in the practice of directed subcontracting.

B. Contractors Performing Governmental Work

Although DOT&E claims that contractors only support its mission, when the subcommittee staff reviewed the actual task orders given to contractors, it was difficult to distinguish between contractor support of DOT&E and contractors actually performing DOT&E's work.

OMB guidance and DOD directive 4205.2 makes it clear that there should be a distinct line between contractors and government employees. OMB Circular A-120 states that contractors should not perform "work of a policy, decision-making, or managerial nature which is the direct responsibility of agency officials." OMB Circular A-76 states that certain functions are inherently governmental and should be performed only by Federal employees.

The Subcommittee staff is concerned that DOT&E contractors are performing work that should be more properly be performed by Federal employees. The following are task orders performed by the BDM Corporation:

- Adequacy of B-1B operational testing.
    - Review test and evaluation master plan.
    - Visit the site of current operational testing. Observe test. Prepare a report of findings on adequacy of testing.
    - Prepare findings on whether the test objectives were fulfilled.

- Assessment of operational testing of the Peacekeeper weapon system.
    - Coordinate with DOT&E staff for strategic systems.
    - Review test and evaluation plans.
    - Visit the site of current operational testing, observe test and prepare a report of findings on adequacy of testing.
    - Prepare findings on whether test objectives were fulfilled.

- MK 48 Torpedo
    - Review MK 48 test plans and provide written comments.
    - Visit site of the operational test. Observe test. Prepare a report on adequacy of testing.
    - Prepare assessments of whether the test objectives were fulfilled.

- Assessment of adequacy of operational testing of BIGEYE.
    - BDM previously reviewed test plan for BIGEYE, visited operational test site, and provided comments on test. Further assistance is required:
    - Review any subsequent revisions to test plans.
    - Visit the current operational test site. Prepare a report of findings on adequacy of testing.
    - Prepare findings on whether test objectives were fulfilled.

- Assessment of Ground Launched Cruise Missile operational test.
    - Review test and evaluation master plan.
    - Visit the site. Observe the test. Prepare a report of findings on adequacy of testing.
    - Prepare findings on whether test objectives were fulfilled.

- Assessment of operational testing of Strategic Defense System.
    - Coordinate efforts with DOT&E SDI committee.
    - Review test and evaluation plan.
    - Visit the site, observe test and prepare a report of findings on adequacy of testing.
    - Prepare findings on whether test objectives were fulfilled.

- Assessment of operational testing of Anti-Satellite weapon system.
    - Coordinate with DOT&E staff for strategic systems
    - Review test and evaluation plans.
    - Visit site, observe test and prepare a report of findings on adequacy of testing.
    - Prepare findings on whether test objectives were fulfilled.

2. Contractor Support on DOT&E Policy and Procedures

- Develop a method for evaluating plans for operational tests.
- Identify and define key factors.
- Develop rating scales
- Develop weighting system for various factors
- Develop minimum passing scores.

- Support Test and Evaluation Council in its studies and evaluations of policy issues.
    - Perform literature searches and develop relevant information and policy issues.
    - Act as observer at other meetings on behalf of TEC.
    - Develop agendas.
    - Make physical arrangements.
    - Prepare briefing material.
    - Develop preparatory material and issue notices.

  - Record and report on meetings.

- Develop and obtain approval for creating Strategic Defense Testing Organization
  - Provide technical assistance in developing outlines, plans, briefings and memorandums for obtaining necessary OSD approval.
  - Attend and provide technical assistance at meetings required to coordinate the concept through issuance of OSD's implementing decision.

- Assess whether Service Program Test and Evaluation Master Plan is adequate.
  - Develop appropriate manner of assessing adequacy of Service plans.
  - Prepare and deliver 15 copies of draft Assessment Guide.
  - Prepare and deliver 50 copies of final version.

- Analyze the studies conducted by industry, GAO and others on testing.
  - Assemble industry, GAO and other studies on testing.
  - Review the studies.
  - Provide a report to DOT&E.

- BDM completed its work in drafting, editing and updating the "Directorate of Operational Test and Evaluation Action Officers Guide to Service Acquisition, Development Test and Operational Test".

- BDM developed a preliminary draft of DOT&E staff reference deskbook.

- BDM started work on the Test & Evaluation Symposium to be held June 1 & 2, 1988, to be jointly hosted by DOT&E and DDR&E. BDM drafted concept papers, conducted site visits to assess potential locations, arranged for the chosen location, drafted and sent out introductory letters, developed a proposed attendee listing, and assisted in the development of the agenda.

- In support of Strategic Defense System operational test, BDM assisted in preparing issue papers, memos and a final draft organizational charter for release within OSD by DOT&E.

3. Questionable Delegation

The listed tasks are only a portion of the work that BDM has performed for DOT&E. While DOT&E claims that BDM is providing support services, the range and type of tasks suggests that these services go beyond mere support and require the contractor to perform inherently governmental functions. From reviewing GAO reports, writing DOT&E policy manuals, visiting test sites and writing reports on particular weapons systems, BDM is intimately involved in virtually every aspect of the operation of DOT&E.

These types of jobs are being transferred to the omnibus contractors, TRW and SAIC, beginning in March of 1989. TRW has already been requested to begin work on assessing the adequacy of the operational testing of the Mine Countermeasures Ship (MCM).

While DOT&E maintains that BDM, and now TRW and SAIC, are merely providing support and the actual DOT&E staff are making all the decisions, they are unable to support their contention. GAO has reported that DOT&E only spends 2% of its staff time visiting test sites.[8] It is clear from the task orders that BDM has spent a great deal of time visiting test sites and assessing test plans and writing reports. Given the limited site visits of DOT&E staff, the only logical assumption is that the DOT&E staff relies heavily on the reports of the contractors. DOT&E staff merely signing off on contractor prepared reports does not prove that the government officials are sufficiently in control of the process.

The sheer volume of contractor involvement coupled with the extensive nature of the tasks contractors perform raises two distinct questions. First, if these reports, evaluations and assessments, and policy manuals, are not used by DOT&E staff, then DOT&E is wasting several million dollars a year. This is unlikely given that DOT&E is dealing with firms of the caliber of TRW, BDM, and SAIC. Second, if these products are used by DOT&E then contractors are intimately involved in governmental activity which more appropriately should be performed by federal employees. Due to the scope and extent of the contractor activity, it is extremely difficult to imagine how DOT&E can maintain that its staff is completely in control and contractors are not exercising governmental policy or decision making authority.

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[8] GAO/NSIAD-87-108-BR

C. Omnibus Contractors

The extensive use of contractors to support DOT&E magnifies the need to guard against conflicts of interest. The potential for abuse is clear when one considers DOT&E's recently awarded $85 million contract with TRW and SAIC. A review of other work being performed by these two companies illustrates the potential for conflicts.

1. TRW

TRW has consistently ranked in the top 30 of defense contractors. For the most recent years its rankings are:

1985 - 27th ($1 billion)
1986 - 22nd ($1 billion)
1987 - 21st ($1.1 billion)

TRW is the fourth largest contractor for SDI ($43 million).

TRW is the 11th largest contractor for weapons and 17th largest for electronics.

TRW is the 8th largest contractor ($600 million) for DoD research and development (R&D).

TRW's R&D and electronics work brings it into contact with a wide variety of other DOD projects and contractors. With this kind of extensive involvement in DOD programs, and particularly with TRW's prominent role in R&D and electronics, it is difficult to understand how this firm can be used to perform objective, independent operational testing.

2. Science Applications International Corporation

SAIC was the 62nd largest defense contractor in 1987 with $276 million in contracts.

SAIC was the 79th largest contractor in 1986 with $229 million in contracts.

SAIC was the 33rd largest DoD R&D contractor ($111 million).

SAIC was the 26th largest contractor for SDI ($13 million).

D. Conflict of Interest

There are several layers to this network that are cause for concern. TRW and SAIC's DoD work, on systems that will eventually come under the purview of DOT&E, raises the concern of direct conflicts of interest. For example, TRW is the fourth largest SDI contractor and SAIC is the 26th largest SDI contractor. The fact that these companies are such large SDI contractors calls into question their ability to objectively monitor and assess SDI operational tests for DOT&E.

1. Example

To DOT&E's credit, one recent conflict was identified under the newly awarded omnibus contract. DOT&E has asked for contractor support on developing test plans for strategic defense systems. As noted above, both TRW and SAIC perform millions of dollars worth of SDI work for DOD. DOT&E wanted to direct the work to another firm because it acknowledged this conflict, however, directing a prime contractor to hire a particular subcontractor is not consistent with federal procurement regulations. DTESA pointed this out to DOT&E and insisted that all work go through the omnibus contractors. The work is now pending assignment to SAIC, the 26th largest SDI contractor. It appears inevitable, therefore, that the omnibus contractors are going to be involved in assessing the operational tests on systems on which they have worked.

2. Example

A larger concern is that SAIC has worked with the top four and eleven of the top fifteen SDI contractors. Since SAIC will continue working with these other contractors, using SAIC to assess those other firm's products creates yet another conflict of interest. Both relationships, SAIC's direct SDI work and SAIC's contractual relationships with other major SDI contractors, questions the objectivity that SAIC can bring to operational testing.

DOT&E recognized the conflict of interest problem with SAIC in this case. However, the work is still going to SAIC. If this practice continues, the integrity of the SDI operational test system will be suspect.

Illustrating TRW and SAIC's network of relationships, the following is a list of the missile systems that DOT&E will monitor in the upcoming months. The list notes the missile contractors with whom TRW and SAIC have worked with on other DOD missile projects.

Army:

Patriot - SAIC was a direct contractor; TRW worked with 11 Patriot contractors on other DOD missile projects.

Stinger - TRW and SAIC worked with seven of eight Stinger contractors on other DOD missile projects.

Tow - TRW and SAIC worked with six TOW contractors on other DOD missile projects.

Navy:

Harpoon - TRW and SAIC worked with 12 Harpoon contractors on other DOD missile projects.

Trident II Missile - SAIC was a direct contractor; TRW worked with 15 Trident II contractors on other DOD missiles.

Air Force:

GLCM - TRW and SAIC worked with 5 GLCM contractors.

Maverick - TRW and SAIC worked with 8 Maverick contractors.

MX - TRW was a direct MX contractor; SAIC worked with 30 MX contractors.

This list emphasizes that, for missile systems, TRW and SAIC have been involved in team relationships with a significant number of companies that produce the systems that DOT&E will ask TRW and SAIC to monitor. This will place both TRW and SAIC in a sensitive position and jeopardize confidence in the objectivity of the testing process.

3. Example

While the questions regarding missile testing remains in the future, this issue has already arisen in relation to four other defense systems that DOT&E has asked TRW to review. The following chart shows the defense systems that TRW is to review, as well as the major contractors that are involved with these systems, with whom TRW has other defense business.

Contractors	MCM	M88 Vehicle	A-10	A-16[9]
McDonnell Douglas			X	
General Electric	X		X	X
General Motors		X		X
Raytheon	X			
Martin Marietta			X	X
Honeywell	X		X	X
Westinghouse	X		X	X
Teledyne		X	X	X

4. Unresolved Issues

Operational testing requires objectivity and the willingness to reject systems. In the interests of allowing objectivity, Federal law prohibits a civil servant from "serving two masters". A federal worker cannot own stock in or have an immediate relative work for a company that he/she was monitoring. At the very least, the details of any relationship the federal employee has with the company would be disclosed and reviewed by the agency ethics official.

However, TRW and SAIC are private companies that seek to enter into defense contracts and subcontracts with other contractors. Given TRW and SAIC's relationships with other companies and their involvement with numerous weapons systems, it will take considerable effort to identify and mitigate not only the direct conflicts, but the myriad indirect conflicts.[10] DoD, as well as other federal agencies, have not demonstrated the ability or inclination to effectively screen contractors for direct conflicts of interest. DOT&E's contract management problems will make it difficult at best to adequately address this matter.

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[9] Mine Countermeasures Ship (MCM); Medium Recovery Vehicle (M88 Vehicle); Close Air Support Aircraft (A-10/A-16).

Subcommittee staff questions whether DOT&E should have been a part of the omnibus contract. The nature of the contract dictates that DOT&E will direct the bulk of its contract support needs to either TRW or SAIC. Thus, the potential for conflicts of interest is great.

The Subcommittee staff is not questioning the technical expertise of either TRW or SAIC. The issue is not the expertise of the contractors, but the special needs of DOT&E. The office was created to give a critical, objective and independent assessment of defense systems. DOT&E's use of private contractors calls into question DOT&E's ability to fulfill its mission.

For the purpose of government activity, there should be a higher standard of conflict of interest. The concern is not just actual conflicts, but the appearance of conflicts. When the issue concerns multi-million, if not billion dollar weapon systems, there should be no room for doubt as to the objectivity of the operational tests.

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[10] See Appendix III for a list of TRW and SAIC's involvement with defense contractors on 8 categories of defense systems.

E. Contractual Merging of Operational and Developmental Testing

A key policy issue in DoD testing is keeping operational testing (OT) separate from developmental testing (DT). The reason is that there are conflicting purposes for the two types of testing. Developmental testing is done to move the system along, with the goal of producing a product that meets all specifications. Operational testing is a rough and ready shakedown to see if the completed system can actually perform under realistic combat conditions when used by typical soldiers.

Both DT and OT are relying on the omnibus contractors for support services. The statement of work from the omnibus contract with TRW and SAIC reads in part as follows:

> This contract will provide technical support to the Office of the Secretary of Defense level Test and Evaluation functions and activities assigned to and conducted by the Office of the Deputy Director of Defense Research and Engineering for Test and Evaluation, the Office of the Director of Operational Test and Evaluation...This technical support will cover **the full spectrum of Developmental Test and Evaluation and Operational Test** and Evaluation activities...(emphasis added)

This raises the issue of a functional connection between DT and OT when an administrative connection is prohibited by law. A contract clause attempts to address this issue but inadequate DOT&E contract management practices leads the Subcommittee staff to believe that DOT&E will be unable to enforce the clause and maintain the division between OT and DT.

Other language in the contract appears to blur the separation of OT and DT and circumvent the Congressional intent in creating DOT&E.

> - DOT&E has placed a new emphasis on the need for and conduct of operational test and evaluation earlier in the development of weapon systems. It is considered essential, in order to support each ensuing acquisition decision, that early operational assessment (EOA) activities commence immediately after Milestone 0. The stereotypical view of operational test and evaluation as the "final exam" for a system prior to proceeding into production has some validity; however, it has limited utility if it serves only to "flunk" the system...
>
> - Another key concern of DOT&E is the treatment of deficiencies found during test and evaluation. Identification of deficiencies is not an end in itself...

This language suggests that tough and rigorous operational testing is not the objective of DOT&E. Rather, it places DOT&E in the position of assisting the services in "passing" the systems. This emphasis on "passing" instead of "flunking" changes the whole focus of DOT&E. Instead of striving to be an independent and rigorous obstacle that a system must overcome, DOT&E is becoming just another layer in the acquisition bureaucracy.

F. Combat Core Certification Professionals, Ltd.

As part of DOT&E's Capabilities Improvement Program (CIP), a small Texas firm, called Combat Core Certification Professionals, Ltd. or C3P, was awarded several sole-source contracts in 1988 to obtain, operate, and maintain Soviet military aircraft and other non-United States military items for use in test and evaluation.

One division of the company, called Aviation Classics, serves as the arms dealer for "threat equipment." The second division of the company, called OP-2-FOR, provides maintenance and operations support.

The Texas Secretary of State Office advised Subcommittee staff that C3P incorporated in Texas on March 13, 1989 and that Aviation Classics incorporated in Texas on March 1, 1989, but changed its name to Aviation Systems, Inc. on May 10, 1989.

DOT&E used DTESA as its contracting office for the contracts, which were originally highly classified. DOT&E representatives advised Subcommittee staff that the contracts were sole source awards because of the contract's original "black" (highly classified) status. Press accounts of interviews with DOT&E staff state that C3P won a sole source contract because it was the only contractor with necessary Federal Aviation Administration (FAA) certifications to perform the work. This has been disputed by FAA officials interviewed by the Subcommittee staff.

The first C3P contract for $3.5 million was for the delivery of three MiG-15s, six Mig-17s, and two MiG-21 jet fighters, as well as one MI-2 and one MI-8 helicopter. Questions have been raised about the utility of these somewhat antiquated aircraft, some of which are Korean War vintage.

Reportedly, the Defense Logistics Agency (DLA) conducted a pre-award survey on C3P which found that the company did not comply with Federal contractor accounting standards. It is also reported that DLA determined that the company was of questionable financial condition.

Three other C3P contracts have been awarded, all of which were sole source. The follow-up contracts requested C3P to repair and maintain the aircraft that had been delivered to OT&E by C3P.

These contracts raise questions about DOT&E's contract management ability, including its oversight over its contracting office, DTESA. An award of a sole source contract to a new firm about which DLA had apparently raised questions and which does not appear to have unique capabilities again highlights insufficient contracting controls.

V. Conclusions

GAO has documented the following inadequacies in DOT&E: limited number of on-site observations of test; inaccurate or incomplete statements to Congress; favorable assessments of tests were not supported by evidence; and poor resource management and internal controls. The DoD IG has questioned DOT&E contracting practices and found inadequate testing, management and incomplete reporting to Congress.

Congress has repeatedly turned back DOT&E efforts to expand its jurisdiction beyond Congressional intent. By organizational and contractual actions, DOT&E is failing to maintain the appropriate independence from the acquisition process and has thereby subverted that intent.

The specific actions that raise the concern are DOT&E memos, proposing and expanded role in acquisition process, the service of the Director of OT&E on the TEC and DOT&E's participation in the omnibus contract with DDR&E(T&E). As its charter makes clear, DOT&E was established to be an independent and objective source of information on the adequacy of operational testing of defense systems. With its extensive use of contractors, such as TRW & SAIC, the independence of DOT&E is severely compromised.

APPENDIX I

THE UNDER SECRETARY OF DEFENSE
WASHINGTON, DC 20301

ACQUISITION
(T&E)

0 3 AUG 1987

MEMORANDUM FOR DIRECTOR, OPERATIONAL TEST AND EVALUATION

SUBJECT: Secretary of Defense Report to Congress - "Test and Evaluation"

I have reviewed the proposed report and must nonconcur.

The report is not consistent with our earlier agreements, proposes consolidation beyond that which I feel is reasonable and, of course, is contrary to existing legislation.

Changes to the testing definitions contained in the report and the resultant shift of responsibility away from acquisition development testing will in all likelihood cause confusion and subsequently erode the progress we have jointly made during recent months.

The letter to Congressman Bennett of May 20, 1987, which was not coordinated with this office, infers changes beyond our prior agreement and, I believe, will do great damage to the development test activity.

cc:
Secretary of Defense

APPENDIX II

THOUGHTS ON THE ISSUE OF "RATIONALIZATION" OVERSIGHT OF TEST AND EVALUATION (T&E)

Congress created an independent OSD office — DOT&E — to oversee and report on operational test and evaluation because it was concerned that decision makers weren't getting unbiased information on whether or not weapon systems and equipment met user requirements. They wanted someone outside the acquisition-advocacy loop with no axe to grind to hold systems up against user requirements and tell decision makers candidly whether or not they worked.

Congress focused on OT&E because the OT community has always made genuine efforts to keep the advocates at arm's length, and because OT is the one "phase" of testing expressly intended to put systems through their operational paces.

The one thing — the crucial thing — Congress failed to recognize was that, in the "Age of Concurrency," the OT&E "final exam" comes far too late. All major milestones are passed and 50-90% of total program dollars are spent or committed before the final is administered and graded — and all without the benefit of any independent assessment of program progress toward meeting user requirements. Frequently, "finals week" arrives well after "graduation" — well after, e.g., all B-1Bs have been bought and paid for.

The Secretary and Deputy Secretary have recognized this critical missing link in the acquisition information chain. Key Senate and House Armed Services Committee staffers who work T&E issues have recognized it. The "working-level troops" in the Building and Military Departments see it. All agree that the approach outlined in the Secretary's report to Congress on DOD T&E (attached) makes plain good sense: Give the independent DOT&E responsibility for overseeing, assessing, and reporting on all T&E conducted in support of procurement decisions; retain all responsibility for development (engineering, or "tinkering," or "make it work") T&E policy and oversight in the USD(A)'s shop (as required by law).

The only remaining Hill resistance to this approach comes from a small group of staffers (four at most) who are Military Reform Activists, and only one of these is on the Senate side (Kirk Robertson, who works for Senator Pryor — the senator himself now seems to be a "cautious convert" to the Department's approach who is looking for a way to support us). The other three are House staffers: Joe Cirincione (Rep. Bennett), Scott Baker (Rep. Ridge), and John Heubusch (Rep. Denny Smith). Only one of these, Cirincione, is a HASC staffer.

There is nothing in current law that would prohibit the organizational changes we want to make to implement the T&E policy spelled out in the SecDef's report. Even if the restrictive language in the House and Senate FY88-89 authorization bills (attached) becomes law, there would still be no legal barrier to doing what we want to do — because we are free to establish an appropriate definition of "development testing." This has been done in the SecDef's report and will allow the necessary changes. The cognizant SASC and HASC staffers concur in this.

The upshot of all this is that we can go ahead with the necessary organizational changes, but the aforementioned Reform Caucus staffers will make a fuss when we do. If we move on this before the FY88-89 authorization conference is completed, we could see them (Cirincione/Bennett) insisting on words in the conference report that we couldn't live with. Thus, we need to lay plans and facilitate "as if we were one office" cooperation between [director OT&E] and DDDR&E (DT&E), but refrain from formal organizational changes until the conference wraps up and the conference report is written and filed (i.e., likely at least until early in the second week in November). Of course, Circincione et al. will be upset even then, and they'll demand a hearing (which they will get in the HASC — Mavroules' Acquisition Policy Panel). Such a hearing will be a golden opportunity for us to make our case publicly.

The basic objection that the Reform Caucus crowd (and other — now former — skeptics) have raised is that DOT&E would be put in the position of checking its own report card if it got involved in all the activities proposed in the SecDef's report. These concerns have been laid to rest except in one area: technical compliance test and evaluation — the component of T&E conducted to determine whether or not systems and subsystems meet contractually defined technical performance specifications. It is suggested that this would make DOT&E a "spec checker" and possibly compromise its independence from the program advocates ("If DOT&E 'okays the specs,' how can it be objective in its later assessments?").

So what does all this mean? It means we must take our time and not make any organizational changes until after the authorization conference report is written and filed. It also means handling the question carefully when it comes in Dr. Costello's confirmation hearing, which you can bet it will. Here's how I'd do it if I were sitting in the hot seat:

"As the decision maker on whose desk the procurement decision buck will usually stop, it is essential that I have the full benefit of the candid and comprehensive insights and assessments of an independent test and evaluation official who has the 'big picture' of all T&E carried out to support procurement decisions. I need this informed independent view at every major procurement decision point in a program's life. It is of little use to have it after the fact, after the dollars have been committed.

"The Secretary's September 25 report on T&E in the Department outlines a very reasonable policy on this, which I am reviewing with Jack Krings and the director of my development T&E shop, Pete Adolph. One refinement we think may be appropriate is that oversight responsibility for technical compliance test and evaluation — 'spec checking' — be vested in Mr. Adolph's office within the USD(A) organization. Of course, and needless to say, we all agree that Mr. Krings Office of Operational Test and Evaluation must remain independent, and I am very pleased with the working relationship Jack and I have."

Such an answer will probably do the trick, filling the necessary square and letting the committee get on with other, "more weighty" matters. The senators most likely to bring up the issue are Levin, Bingaman, and Dixon. Levin and Dixon probably won't; their staffers have indicated to me that last year's battle over the independency of DOT&E was "quite enough, thank you." Bingaman, as the chairman of the cognizant subcommittee, probably will — but on a virtually pro forma basis. He has no personal interest in the subject; to the extent he pays any attention to it at all, it's at Pryor's instigation. As for Senator Quayle, I have been assured quite reliably that he, too, is in the "quite enough, thank you" category.

Karl J. Pflock

INSIDE THE PENTAGON – November 27, 1987

APPENDIX III

This chart details the network of defense contractors that TRW and SAIC have worked with on six categories of weapons systems. Beneath each defense category is listed the number of major contractors for that category with which TRW and SAIC have worked on defense projects. The overlap figure is the number of companies that both TRW and SAIC have worked with on defense systems. The problem with the overlap between TRW and SAIC is that both companies would have potential conflicts if they were asked to monitor the operational tests of products from these other companies.

I. Electronic Systems

SAIC	OVERLAP	TRW
20	20	54

II. Missiles

SAIC	OVERLAP	TRW
37	28	43

III. Military Laser and Electronic Ordnance

SAIC	OVERLAP	TRW
10	8	17

IV. Anti-Submarine Warfare

SAIC	OVERLAP	TRW
4	2	5

V. Command Control Communications and Intelligence

SAIC	OVERLAP	TRW
18	15	43

VI. Space Systems

SAIC	OVERLAP	TRW
9	7	36

CONGRESSIONAL
MILITARY REFORM CAUCUS

Rep. Barbara Boxer
D-California
Co-Chair

101st Congress

Sen. William V. Roth, Jr.
R-Delaware
Co-Chair

June 2, 1989

The Honorable Dick Cheney
The Secretary of Defense
The Pentagon
Washington, D.C. 20301-1155

Dear Mr. Secretary:

We are writing to express our concerns regarding Department of Defense's efforts to test our major weapon systems before they enter full-scale production. As a former member of the Military Reform Caucus, you may know that this has been a high priority of the Caucus.

With the imminent departure of the current Director of Operational Test and Evaluation, Mr. John Krings, we would like to take this opportunity to convey our views on the current state of testing operations and how it might be improved. We urge that you nominate a candidate for the position of Director of Operational Test and Evaluation who will be an independent watchdog on behalf of our servicemen and women, committed to tough, realistic and independent testing of our weapon systems.

On Thursday, May 4th, the Military Reform Caucus held a panel discussion on Pentagon Weapons Testing: Congressional Intent Vs. Reality. The purpose was to review the conduct of the Pentagon's Live-Fire and Operational Testing Offices and the extent to which current law mandating tough, realistic testing of our weapon systems before they enter full-scale production is being implemented.

Our panelists included Mr. Russ Murray, Special Counsellor to the House Armed Services Committee, Mr. Charles Watt, former Director of DOD's Office of Defense Test and Evaluation, and Mrs. Eleanor Chelimsky of the U.S. General Accounting Office. I am sure you know that some of our members were very unhappy that Mr. Krings decided at the last minute not to attend, and that DOD also decided that Mr. James O'Bryon, the Director of DOD's Office of Live-Fire testing, would not be permitted to attend, although he was more than willing to do so.

The basic findings of our panel discussion were:

(1) We are not doing better today than we were in 1983 when the Office of Operational Test and Evaluation was established by law. Too many weapons still enter full-scale production before they are properly tested and a mature design is fixed.

(2) The difference between developmental and operational testing is blurred by combining both types of testing and is further complicated by the trend to use operational assessments rather than operational tests.

(3) The apparent merging of responsibilities for developmental and operational testing under the DOD Test and Evaluation Committee appears to us to contradict the law.

(4) Contractors are still too involved in testing.

(5) Accurate and unfiltered reporting of test results is still a problem. Decision makers are not receiving honest feedback.

(6) Testing is still not as realistic and objective as it could or should be.

(7) Concurrent development and production is all too common.

(8) In general, the laws and regulations are sound, but what is needed is greater attention and commitment to realistic testing on the part of top Department of Defense decision and policy makers.

Mr. Secretary, we respectfully request that you address these concerns in regard to testing and we urge you to take a personal interest in seeing that the testing and evaluation of our weapon systems is carried out as the law intends.

The consequences of not doing so are very serious. In the rush to field the latest, technologically sophisticated weaponry, we are purchasing weapons that may fail in the battlefield. We should not ask the members of our Armed Services to risk their lives to defend their country with weapons that do not work as intended. We should not ask the American people to pay billions of dollars for weapons that are not ready to be produced.

As you may recall, the Packard Commission also called for high priority attention to be given to building and testing prototype systems to determine whether new technology would improve military capability and to provide realistic cost estimates of these systems. Their recommendation was based on an analysis of what elements were common to successful commercial programs.

We in the Military Reform Caucus request that you place the highest priority on reviewing the process used in the Defense Acquisition and Defense Resources Boards that permits authorization for production of multi-billion dollar weapon systems before the results of operational and live-fire testing are known. This leads to troubled systems such as the B-1B bomber or the DIVAD air defense gun. The AMRAAM missile and the C-17 cargo plane are other examples of current programs that may not live up to expectations and have not been adequately tested.

In addition, we are concerned about the use of so-called operational assessments to substitute for realistic operational testing. Although there may be some valid need for such assessments early in the development of a system, there can be no acceptable substitute for realistic and objective operational testing and evaluation as the weapon nears production.

Again, we look forward to a nominee for Director of the Office of Operational Test and Evaluation who will be aggressive in addressing the issues raised in our panel discussion and who will carry out the will of Congress in regard to the testing and evaluation of our weapons systems.

We share your interest in seeing that this nation gets the most for every dollar we spend on our national defense. We look forward to working with you and offer our assistance on this and other matters pertaining to the reform and improvement of our defense acquisition system.

Sincerely,

Barbara
Barbara Boxer
Member of Congress

Bill
William V. Roth, Jr.
United States Senator

Charles E Bennett
Charles E. Bennett
Member of Congress

Tom Ridge
Thomas Ridge
Member of Congress

Terry Sanford

Terry Sanford
United States Senator

Jim Jeffords

James M. Jeffords
United States Senator

Paul Simon

Paul Simon
United States Senator

Joseph Lieberman
United States Senator

Alan Cranston

Alan Cranston
United States Senator

Albert Gore Jr.

Albert Gore, Jr.
United States Senator

David Pryor

David Pryor
United States Senator

Jim Sasser

James Sasser
United States Senator

Herb Kohl

Herb Kohl
United States Senator

Chuck Grassley

Charles E. Grassley
United States Senator

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JIM MOODY

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NEWT GINGRICH

Proposed Testing Amendments of the
Congressional Military Reform Caucus

SEC. . OPERATIONAL TEST AND EVALUATION AMENDMENTS

(a) OPERATIONAL TEST AND EVALUATION REQUIREMENT.—Subsection (a) of section 2366 of title 10, United States Code, is amended by adding at the end the following new paragraph:

"(3) The requirement for an operational test and evaluation in paragraph (1)(C) is not satisfied by an operational assessment based on—

"(A) computer modeling;

"(B) simulation;

"(C) an analysis of system requirements, engineering proposals, design specifications, or any other information contained in program documents; or

"(D) any other kind of test.".

(b) INITIAL LOW-RATE PRODUCTION DEFINED.—Section 2366(e) of such title is amended by adding at the end the following new paragraph:

"(9) The term 'low-rate initial production' means production of items at the lowest feasible rate necessary for—

"(A) the establishment and maintenance of a single production line for the production of the items; and

"(B) production of the minimum quantity of items necessary for initial operational test and evaluation of the items.".

Prepared by staff of Subcommittee on Oversight of Government Management

POTENTIAL CONFLICTS OF DOT&E CONSULTANT BDM, INC.

A. MX Missle

1. DOT&E: Support for oversight of MX testing.

2. Air Force Operational Test and Evaluation Center (AFOTEC): Support for MX testing.

3. Ballistic Missile Office: Contracts on MX basing, hardness, and survivability.

4. Air Force Contract Management Division (AFCMD): Contracts on silo hardening and superhardening.

B. Strategic Defense System

1. DOT&E: Support for oversight of SDI testing.

2. Air Force Operational Test and Evaluation Center (AFOTEC): Support for SDI testing.

3. SDIO: Contracts for technical assistance.

4. Air Force Contract Management Division (AFCMD): Contracts on advanced space technology.

5. Office of Naval Research: Contracts on optical computing approaches to SDI problems.

C. Advanced Space Systems

1. DOT&E: Support for oversight of space systems testing.

2. Air Force Contract Management Division (AFCMD): Contracts in support of advanced space technology.

D. B-1B Bomber

1. DOT&E: Support for oversight of B-1B testing.

2. Air Force Operational Test and Evaluation Center (AFOTEC): Support for B-1B testing.

E. C-17 Aircraft

1. DOT&Ed@: Support for oversight of C-17 testing.

2. Air Force Operational Test and Evaluation Center (AFOTEC): Support for C-17 testing.

7915 Jones Branch Drive, McLean, VA 22102-3396 • (703) 848-5000 • Telex: 901103 BDM MCLN

BDM
...E BDM CORPORATION

Writer's Direct Dial Number (703)848-6518

BDM/MCL-RFW-05832-87

September 29, 1987

Colonel Daniel J. Feighery
Staff Assistant for Strategic Systems
OSD/DOT&E
Room 3A336, The Pentagon
Washington, D.C. 20301

REFERENCE: Contract MDA903-85-C-0171

Dear Col. Feighery:

This letter is to confirm for the record our telephone conversation of Friday, September 11, in response to your invitation to consider potential tasking under the referenced contract. You had asked us to consider whether we could undertake to perform an early assessment of the potential operational effectiveness and suitability of the C-17 system on the basis of available documentation.

BDM has the technical qualifications to perform the task. Further, we concur that it would be an appropriate effort under the contract Statement of Work.

However, we must respectfully suggest that your office not issue technical guidance to perform this task. Our position is based on our shared concern over the issue of perceived conflict of interest. BDM has provided and continues to develop and provide, under past and current contracts with the C-17 prime contractor, Douglas Aircraft Company, simulation models and computer assisted tools for the early evaluation of C-17 performance characteristics, specifically aircraft availability and readiness in an operational environment. The primary application of these tools by Douglas will be for the early assessment and analysis of how well the C-17 will perform the Operational Readiness Evaluation scheduled early in the system's production cycle.

We firmly believe that this work would not bias our assessment of the system under the conditions of the task as you outlined it. Nonetheless, we are sensitive to the point that it can be as important to avoid the appearance of a conflict of interest as it is to avoid the reality of it, and we are reluctant to engage in an activity that would leave DOT&E or BDM open to criticism.

We are proud of the work we are doing for your office, and look forward to other opportunities to support your vital work.

Yours very truly,

THE BDM CORPORATION

Ralph F. Wetzl
Program Manager

RFW/prf
cc: Mr. Parker Horner, COR
OSD/DOT&E
Room 3C364
Washington, D.C. 20301

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-1700

OPERATIONAL TEST
AND EVALUATION

MEMORANDUM FOR THE ADMINISTRATION ASSISTANT TO
SECRETARY OF THE AIR FORCE

SUBJECT: Transfer of Contracting Responsibilities
and Requisite Personnel Requirements

Reference(s): (a) House Appropriate Subcommittee for Defense Hearing 26 April 1989

(b) Inspector General DoD Report of Investigation; subject: Allegation of Contracting Improprieties by the Defense Test and Evaluation Support Agency dated 14 April 1989

During the past several months, Congress has expressed concern regarding the independence of the Office of the Director of Operational Test and Evaluation. The report and questions and resulting report from Reference a. was the latest expression of concern and specifically addressed DT and OT relationships and classified contracting within the Defense Test and Evaluation Support Agency (DTESA). Reference b. recommended certain corrective actions regarding contracting relationships for DTESA, one of which was the separation of Head of Contracting Authority (HCA) and operational responsibility for increased internal control.

The following actions will be executed to correct defficiencies and improve efficiency of the DOT&E mission.

a. The DOT&E Test Asset Support Office (TASO) will be established to meet the OT&E Capability Improvement Program (CIP) requirements. The TASO will be established by separate charter with administrative support from the Air Force.

b. A portion of the DTESA Procurement Directorate to be designated by DDDR&E(T&E) Directorate shall become subordinate to TASO. The newly formed TASO procurement activity has been approved by the Assistant Secretary of Defense for Production and Logistics under separate correspondence. The newly formed TASO procurement activity will require at least seven (7) personnel with the expertise to execute the Omnibus contract and the ability to perform all required functions of contracting, i.e., contract officer, contract specialists, procurement analyst and clerks, pricing, and administration. It is best that a transfer of function administrative action be utilized.

c. Mr. Nicholas Toomer, DOT&E, will be designated the Head of Contract Activity.

d. The Omnibus contract will be transferred from DTESA Procurement Directorate to TASO Procurement Activity.

e. Eight (8) personnel authorizations will be assigned to the TASO for support of requirements definition, security, and technical analysis in support of the OT&E CIP. Job series classifications and grades will be submitted under separate correspondence in coordination with administrative support activity and approval.

f. The Omnibus contract will be executed by TASO. The Director OT&E, DDDRE(T&E), and DTESA Director will submit by name their respective Contracting Officer's Technical Representation (COTR) to the newly appointed HCA NLT 22 Jun 89.

g. Request the TASO Procurement Activity be physically relocated with the Kirkland AFB Contracting Activity.

Require all reorganizational administrative approvals be completed NLT 23 June 89 and physical relocations completed NLT 1 August 1989.

John E. Krings
Director, Operational
Test and Evaluation

STATEMENT OF CONGRESSWOMAN BARBARA BOXER

for hearing on
"Department of Defense Weapons Testing: Consultants, Contractors and Policy"

Subcommittee on Federal Services, Post Office, and Civil Service
Senate Committee on Governmental Affairs

June 16, 1989

Mr. Chairman, I am very pleased that you are holding this hearing today on the relationship between defense contractors and operational testing. I certainly share your concern about this issue.

I want to also thank you for your continued leadership. You played a major role in passage of the 1983 law that mandated the office of the Director of Operational Test and Evaluation. As a past cochair and active member of the Military Reform Caucus, you have remained committed to improving the effectiveness of that critical office.

Mr. Chairman, I am frustrated and disheartened Congress must continually revisit this issue, holding hearings and fine-tuning the law. It is no secret that the office has been a terrible disappointment to many members of Congress who hoped it would provide frank and honest assessments about our multi-billion dollar weapons programs. Our recent Military Reform Caucus program on testing only confirmed that the situation is about the way it was before the law was passed.

It should come as no surprise. Several years ago, the outgoing director of O,T, and E, John Krings, was quoted as saying that "sometimes you have to buy a scarecrow - it won't kill many birds, but it'll keep a lot of them away. It's vital to get something out as a deterrent...." That says a lot about why this office has failed so often in carrying out its legal mandate. The current Director has never understood his job, or worse, he understands, and has chosen to circumvent his congressional mandate anyway.

There is abundant evidence on the record that the Director thinks he is above the law.

For instance:

1) The General Accounting Office last year criticized the reports of the Director of O,T, and E as incomplete and innaccurate, because they included favorable assessments of weapon systems that were not justified. It concluded that the office was not fulfilling congressional intent.

2) Contractors are present at operational tests, contrary to congressional intent. The GAO and the DoD Inspector General found

this to be the case with at least two weapon systems they reviewed. Mr. Krings tried to justify this contractor involvement by testifying to the House Armed Services Committee last September that

> "....contractors are present and very valuable in combat. This assumption that there are no contractors in combat is insane. A lot of our combat is done by contractors."

Mr. Chairman, I think it is "insane" to expect civilian contractor employees to put themselves in harm's way during combat. The government simply has no way to hold them there, nor can we expect such a sacrifice of civilians. There is no excuse for contactors to be involved in this last phase of testing.

3) Too often, millions, billions of dollars are spent on weapon systems before they are operationally tested. Examples include the Phoenix and AMRAAM missiles. Most recently, according to the IG, the Army and the Director of O,T & E approved a plan to buy over 27,000 combat radios before testing is complete.

4) There has been a concerted effort by the current O,T, and E director to merge the functions of operational and developmental testing, again, in direct contradiction of the law. Mr. Krings is now installed as the Chairman of the Test and Evaluation Committee, with responsibility for developmental test and evaluation.

5) There is an increasing reliance on operational assessments, that is, computer modeling and simulation, rather than combat realistic operational tests. This is a violation of the law, and, as GAO points out, this practice depends on contractor and Service agency input. Thus the independence of operational testing is compromised.

Mr. Chairman, these are just some of the issues associated with the need for reform of this office. I know you have particular interest in another: the use of outside consultants by this office.

I have submitted three amendments on the issue of operational testing to the House Armed Services Committee for consideration that address some of my concerns.

The first, which I have authored, would change current law to remove the option allowing contractors to be involved in operational tests if they will be "involved in the operation, maintenance and support of the system being tested when the system is deployed in combat." I believe there is not sufficient evidence to warrant this loophole, and it has been exploited.

I join Senator Roth in offering the second and third amendments. One would make clear that operational assessments cannot be substitutes for operational testing. The other is aimed at restricting the number of weapons produced before operational testing is completed.

Mr. Chairman, I look forward to the results of your hearing. I hope that with the departure of Mr. Krings, Secretary Cheney will heed the advice of the Military Reform Caucus to take a personal interest in this office, and to nominate for the position a tough, independent watchdog.

I will be working with my colleagues in the Military Reform Caucus and on the House Armed Services Committee to enact needed testing reforms, and I look forward to working with you.

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June 9, 1989

Senator David Pryor
United States Senate
Russell Senate Office Building
Room FR 264
Washington, DC 20510

Dear Senator Pryor:

I was asked by Kirk Robertson of your staff to appear as a witness at your Operational Test & Evaluation (OT&E) hearing on June 16. Regrettably, business commitments prevent my being there. This letter summarizes my views on several issues you may be addressing. Please feel free to use it as desired.

I have an extensive background in hands-on OT&E. For three years (1974-77) I headed the Navy's independent OT&E organization (the Operational Test and Evaluation Force, OPTEVFOR). This was the period when the critical independent role of OT&E in weapons system acquisition was being developed, and the concepts for performance of OT&E were being established. Subsequently, for three additional years (1980-83) I headed the Navy's Research, Development, Test and Evaluation Organization in the Pentagon (OP-098), helping COMOPTEVFOR structure weapons system acquisition programs to ensure adequate OT&E and making use of his OT&E reports at milestone decision points.

During this extensive experience with OT&E in many weapons system acquisition programs, large and small, several basic truths about OT&E have been driven home to me time and again. The following paragraphs summarize a few of these.

First, strong, independent OT&E is absolutely essential to good weapons system acquisition. It may well be the single most important element in the process, because it provides decisionmakers with objective data at key milestone decision points.

Second, it is essential that OT&E be completely independent. Any merging of OT&E with Development Test and Evaluation (DT&E), or any blurring of the separate responsibilities and different reporting chains for each, will--in my judgment--disable the effectiveness of OT&E. In amplification of this, I am enclosing a copy of my remarks to the National Security Industrial Association in 1976. This paper is a clear description of the critical differences between OT&E and DT&E, and the essential need to keep them separate.

Third, the single most important principle about OT&E--almost an inviolable rule--is that a solid, effective phase of OT&E must be accomplished and reported in every system acquisition program prior to the commencement of low-rate initial production. I am enclosing a second paper which treats this subject in some detail. I prepared it for the GAO in 1984, to illustrate that concurrency in weapons system acquisition is really a T&E issue.

Even more important than these points, however, is the background and personal qualities of the individual who serves as Director, OT&E in the Pentagon. Unless he understand OT&E thoroughly and supports it effectively both in basic policy/procedure and in each weapons system acquisition program, other actions will have little effect.

After years of close observation of many individuals in critical OT&E billets, I have come to the conclusion that four qualities should be focused upon when selecting a new Director:

- First, and of highest priority, he should have a strong operational background. OT&E is not at all like DT&E, and test pilot experience, for example, provides exactly the wrong type of background. What is needed is someone with extensive experience in operating weapons systems in a combat-type environment. Thus, a retired military person is almost required.

- Second, the man must have (to use the familiar phrase) "guts." He must be immune to pressure of any type, whether from the military-industrial complex, the Congress, the media, or any other source. He must be able to stand alone in strong support of his views.

- Third, he must have the nicest judgment. T&E is about 10% test and 90% evaluation; and this individual is the one upon whom the system must depend to evaluate and report OT&E with insight, discernment, common sense, and integrity.

- Finally--and of less importance than the first three--it helps if he has reasonable technical background.

I know only one individual whom I would unreservedly recommend as DOT&E: Rear Admiral Edward W. Carter, III, U.S. Navy (Retired). Ed Carter served for three years as Commander of the Navy's Operational Test and Evaluation Force, and subsequently as the Navy's Inspector General. He has the strongest qualifications in all four of the criteria listed above.

I wish you all the best in your important hearing.

Sincerely,

Robert R. Monroe

Robert R. Monroe
Vice Admiral, U.S. Navy (Ret.)

Script of Rcmarks Made by
RADM Robert R. MONROE, U. S. Navy
Commander Operational Test and Evaluation Force
at the National Security Industrial Association Conference
in Washington, D.C. 23 September 1976

RADM ROBERT R. MONROE: Thank you, Charlie. Good afternoon, gentlemen. I guess I am the only "Operational Tester and Evaluator" on the Panel today, so these views do not necessarily represent a consensus.

I was not able to be here this morning, so if I spend time repeating some points that were made, I ask your indulgence. And I may reemphasize a few points made by Charlie Graves in his opening statements - - the ones that I think are particularly important from my point of view as the operational tester for the Navy.

I would like to start with the proposition that development test and evaluation (DT&E) and operational test and evaluation (OT&E) are totally different, in every aspect. I wouldn't say that OT&E is any more important than DT&E. I do think it's equally important.

As I view it, there is no overlap, no duplication whatsoever, between the two. If there is, then I am doing something wrong in my job.

OT&E assumes, as a given, that the equipment meets the technical specs, that it will do what these specs require it to do. And it goes on from there. If the equipment falls seriously short of the technical specs, it shouldn't even get to the next phase of OT&E.

I would now like to try to describe OT&E in several different ways, or from several different perspectives.

First, I would describe OT&E as having three characteristics. If it's OT&E, it exhibits these three characteristics: The first is that it is done in the operational environment, with all the rigorous conditions that you find there. For example, for a Navy system, it's done aboard ship, in high seas, with green water coming over the bow, temperature extremes, and that kind of thing. Second, is that fleet-type people are doing the operation and maintenance of the equipment - - not people specially trained, not test pilots, not technicians or engineers, but the average sailor who has all the propensity for making Murphy's law happen that typical officers and men in the fleet do. Third, is that you are testing it against a simulated enemy who is being just as unpleasant as he possibly can, using avoidance, countermeasures, and every dirty trick in the books. If it doesn't have all of these characteristics, then it's not OT&E.

Approaching OT&E now from the second point of view, what we are trying to assess is operational effectiveness and operational suitability, and you can't really do this for a "black box." Thus OT&E must address the total system. Let's say we are testing a missile. When my organization gets it for OT&E, we are not testing the missile itself, but rather the missile system, which involves the platform you fire it from, the acquisition system the platform has, the targeting systems, the people who man it, the logistics support for it, the interfacing equipment that the ship or aircraft would normally be operating at the same time, and so on. So a clearcut distinction between DT&E and OT&E is that DT&E is testing a weapon, while OT&E is testing a weapons system. (And very, very seldom does the development program involve the whole system.) Thus, the weapon under test is hazarded somewhat by the fact that it may fail OT&E not through any fault of its own, but through the fact that the interfacing systems aren't well enough adapted to it, or don't work well enough in handling their part of the problem.

A third significant characteristic of OT&E lies in the criteria or measures of effectiveness that are used. We are really in our infancy in understanding this point. In very few weapons systems have I seen a technical measure of effectiveness or technical criterion that was of use to the operational tester. He can take these and adapt them to the operational testing business, but he generally can't use them outright. I will give you some examples of technical and operational criteria, but before I do, I would say that although I have been at this business almost three years, I am still not quite certain as to the importance of measures of effectiveness or criteria for operational testing. They are certainly not dominant. I would be perfectly willing operationally to test anything anybody can name without having measures of effectiveness or criteria for the test. I am also perfectly willing to use them, but they can easily produce the wrong answer if you overconcentrate on them.

Let's look at a few examples. If we are talking about testing an eight-inch gun aboard ship, the kind of criteria that I will find, if I go to the specifications documents, are that it must fire 10 rounds a minute, or that it must fire 30,000 yards using full charges, or 22,000 yards using reduced charges. I don't really care whether it meets these requirements or not. Eight rounds a minute or 12 rounds a minute isn't going to make that big a difference. 30,000, 25,000, 35,000 - - these aren't the important things to the operational tester. What he will use are the basic criteria by which gunnery has been measured over the years: Hits per gun per minute, early hits, who's afloat after the engagement is over, that kind of thing.

In R&M (Reliability and Maintainability) the same thing applies. I simply can't use technical measures. If you asked me to test an air-to-ground missile and tell me its MTBF (Mean Time Between Failures) should be 30 hours, I don't even know where to start. Are you talking about hours that the missile is under power on the bench, or hours that it is aloft, or hours that it is aloft under power, or hours that it's on the aircraft under power on the flight line during pre-flight and post-flight testing, or what. How do these various kinds of times relate to each other? I don't think anybody knows. Certainly, I don't. I doubt if the Program Manager does. I doubt if the contractor does. Is a missile under standby power on an aircraft pulling 4 G's at MACH .9 stressed more or less heavily than one under full power undergoing testing at an air-conditioned test site? I don't know what the relationship between these times is. But I don't have to know, because I should be using an operational measure, like "80% of the missiles should be in a fully up condition after 10 captive flights of typical duration (catupult takeoff, 1.8 hours' flight time at high and low altitudes, arrested landing)." This is an R&M criteria that means something to the decision-maker in the Pentagon and the Task Group Commander alike, and something that I can test to. So DT&E and OT&E thresholds are different.

As a sort of an aside here, I believe one of the things we have got to start doing is writing contract specifications in operational terms, either in lieu of, or in addition to, technical terms - - but that probably is a bit beyond the scope of this topic.

I would now like to summarize a few of the differences I see between DT&E and OT&E to highlight the points that have been made so far.

In DT&E you generally know what you are going to measure, what particular parameter - - launch velocity, the number of G's that are pulled as the missile acquires, time to climb, etc. The tests are structured so as to hold many things constant, isolate others, and allow you to measure the one or two quantities of interest. In OT&E we generally aren't able to specify what we want to measure at all. The objective is simply to create combat conditions as closely as possible, and watch what happens.

Another point of difference is that in DT&E it is generally possible to get statistically significant data through replications of tests. If OT&E is done well, this will not be possible, because each interaction will be as unique as a combat experience is unique.

In DT&E, the people who are in the test organizations themselves (for example, those in General Powers' organization), should be primarily technical. For OT&E, the people in operational test organizations should definitely not be technical. They should be almost totally operational. They should be the people in that service who have more experience in taking a weapon into action against an enemy than anybody else around.

I would summarize all this by saying that DT&E is a science and OT&E is an art. Many times we have come to grief in the past in not doing good operational testing by attempting to make it too much of a science, too technical.

I would like to conclude with two items that came up in discussions.

The first is concurrent testing, that is, doing DT&E and OT&E at the same time. Several people who were here this morning have commented that this was discussed fairly extensively. I would like to add my voice, to say I don't think it can be done. In a few rare cases we have been able to get some useful operational information from technical testing, but the problem is that the developer, or the contractor, or the program manager is simply not willing — with the equipment in whatever developmental stage it is — to put it under those test conditions which are the only ones of interest to me.

As an example, if the equipment is a sonar, the developer will want to test it against "tame" submarines, that is, those following some prescribed course, or observing speed or depth restriction, and that is fine for him. He ought to do it that way. That is technical testing. For OT&E, however, I am not interested in testing against any submarine that isn't unrestricted in his actions. He should be able to pick his course, and use decoys and countermeasures in the most ingenious manner possible to defeat the sonar being tested.

As another example, in testing a missile, I would not be interested in shooting, say, at targets on to a steady course and speed, while the developer would probably not be willing to shoot at radically maneuvering targets. Likewise, I am not interested in shooting at targets that aren't jamming or using DECM or chaff, because an enemy is going to be using them. I am not by any means indicating that the developer should be doing something he isn't. I am saying that his DT&E and my OT&E are both essential and both totally different.

As far as actual manning of equipment during testing, I don't want technicians or engineers to be anywhere near it for periods of weeks. I want the equipment to degrade the way it normally will degrade in the fleet. If the documentation is in error by specifying poor alignment procedures, then I want the fleet personnel to align it using the poor documentation, and to test it while operating poorly aligned. In sum, I can site only a few examples, maybe half a dozen, of concurrent testing, in which DT&E and OT&E could go on in the same test period, or at the same time.

The last point is somewhat off my narrow subject, but does have a great deal to do with T&E in general. Again and again in briefings and conferences I am asked: "What are the major problems in T&E?" I think there is really only one T&E problem, and it's not in T&E. It's in the planning, programming, and budgeting system - - and in the appropriations system - - by which we pigeonhole money out into the future in theoretical boxes called fiscal years and appropriation categories and program elements. Starting in about 1970, with the Blue Ribbon Panel, and following thereafter with the Commission on Government Procurement, we have been establishing a defense-industry material acquisition system that is achievement-oriented. Yet we are still programming and appropriating our funds on a calendar-oriented system; and when we reach the point where the calendar says we should be going into production, and the test data will not support this, it simply is too painful to try to reprogram large amounts of money on short notice from procurement into RDT&E to make it work before we buy it. Until we come to grips with this problem, I don't think we are going to make any great progress in improving T&E by looking at other, smaller T&E problems.

Excuse me for diverting briefly for the last two topics. Thank you, gentlemen.

April 1984

THE ISSUE OF "CONCURRENCY" IN WEAPONS SYSTEM ACQUISITION

VADM ROBERT R. MONROE, USN (RET.)

Although little is written on the specific issue of "concurrency" in weapons system acquisition, it is one of the most important, most misunderstood, and most contentious aspects of the RDT&E/acquisition process. A common understanding of concurrency by all participants in the process could go far toward improving weapons system acquisition. The purpose of this paper is to provide a clear and reasonably comprehensive treatment of the subject.

Concurrency: What It Is. In simplest terms, concurrency is the overlap in time between the development of a weapons system and its production. In a non-concurrent program, development (including test and evaluation [T&E]) is completed before production is commenced. In a concurrent program, production is started while development is still underway. These relationships are shown graphically in Figure 1. The top diagram depicts the program structure of a typical non-concurrent program, while the bottom diagram shows that of a typical concurrent program. (Later figures will go into more detail on all elements of program structure shown here, and on varying degrees of concurrency.) Concurrency is measured from the startup of the production line to the end of the last T&E phase in development.

Concurrency: Why It's Important. The concurrency issue is of particular importance for DOD systems because development is funded in one appropriation (RDT&E) while production is funded in another (procurement). Not only are there numerous detailed rules governing each appropriation (many of them singularly ill-advised from the viewpoint of having a sound overall acquisition process), but, to make matters worse, RDT&E and production are controlled by different Congressional subcommittees. Thus the concurrency issue is the central interface between the two processes--development and production--which make up weapons system acquisition. Much of the blame for poor DOD acquisition results in the past can be attributed to a haphazard treatment of concurrency--lack of definition, lack of understanding, lack of discipline, abdication of reason to emotion, etc.

Concurrency: Pros and Cons. The obvious benefit of non-concurrency is that you have high confidence in what you will be producing, since it is a fully developed, proven system. On the other hand, the obvious disadvantage of non-concurrency is that this serial operation (first development, then production) results in a lengthy RDT&E/acquisition process. From these simple, black-and-white statements, the concurrency issue can be expanded into countless shades of grey, and the pros and cons multiply and change form as you go. For example, there are those who would argue that one really should not have high confidence in a non-concurrent program, since the production systems, manufactured on hard tooling, will turn out to be different from the hand-crafted developmental models that underwent T&E. (This can be true if the program is basically unsound to start with, but it will not occur in a well-planned program.) The proponents of this view would urge a great deal of concurrency and very early production, so that key T&E periods could be carried out using production hardware. This approach has a number of disadvantages, one of which is that it will not work. There are others who argue that it simply makes no sense to start producing a system that is still in development, since the first few years of production runs will either have to be scrapped or reworked and retrofitted at great expense to the government (or--worse--they will be deployed with major performance shortcomings, vulnerabilities, and serious reliability/ maintainability/availability problems.)

A significant degree of concurrency is generally favored by those who: (1) are less concerned with cost to the government; (2) place maximum emphasis on "meeting the threat" technologically; (3) are most driven by the profit motive (since industry's profits come from production, not development); (4) are determined to meet a fixed (often unrealistic) initial operational capability (IOC) date; etc. Less concurrency is generally favored by those who: (1) place maximum emphasis on how well the system actually works against an enemy under operational conditions; (2) are determined to increase reliability/ maintainability/availability in the field; (3) are willing to pursue weapons system acquisition in a patient, orderly, sound manner; (4) tend to be skeptical about the effectiveness of the acquisition process in the past; etc.

It is unfortunate that the difficulty of the Washington acquisition maze itself tends to cause people to "take sides" on concurrency in each individual program. Those who favor the program urge more concurrency, because most of the serious problems in a system are identified in the T&E periods that occur late in development, and if the system is already in production at the time these come to light, the program will have gained enough constituencies and enough momentum to survive. Those who oppose the program urge less concurrency, believing that this will give them additional opportunities to slow or kill the system before the startup of a production line makes this virtually impossible. This "politicizing" of concurrency is regrettable, for the issue is much too important to be handed over to those who would use it as an emotional argument to support predetermined positions.

Changing Views of Concurrency. The Pentagon's policy on concurrency has changed markedly over time. In the 1960s the "total package procurement" of the McNamara era represented the extreme in concurrency. The adverse results of this policy—lucidly described by the Fitzhugh Blue Ribbon Panel of 1970—led to DEPSECDEF Packard's policies that seriously restricted concurrency (termed, by observers, fly-before-buy). These policies--announced in the original version of DOD Instruction 5000.3 in January 1973—worked much better; but they faced strong opposition in introduction and were just beginning to take effect in the late 1970s when repeated charges (inaccurate in the great majority of cases) that they unacceptably lengthened the acquisition process caused them to be greatly watered down in subsequent versions of DODD 5000.1 and DODI 5000.2 and 5000.3. Thus concurrency, which had been out of favor for several years, became acceptable in a general sense. No procedures or safeguards to control it were established, however. For the past five years there has been no clear Pentagon policy on concurrency; and practices vary widely among the four services and among the various offices in OSD. The most effective voice on the issue--and the most conservative policy—has been that of the Navy. It is appropriate here to make an observation about changes to acquisition policies. In hyper-active Washington, those with power expect to see instant response to a rudder order. This simply is not going to happen in the world of RDT&E/acquisition, because results are seen in individual programs, and these take years to develop and are quite difficult to change once underway. Thus if a major change were made today in concurrency policy, one should not expect to see any real impact for five to seven years.

How To Think About Concurrency. As emphasized earlier, a clear understanding of concurrency is one of the most important keys to good weapons system acquisition. It should be focused upon, treated explicity, and handled in a pragmatic (not dogmatic) manner. First, though, it's important to understand what concurrency is all about. This can be stated in one short sentence: Concurrency is a T&E issue! What we're really talking about in concurrency discussions is how much T&E data will be available at the time production decisions are made! In a highly concurrent program, the answer could be virtually zero. In a non-concurrent program it should approach 100 percent. Once it's understood that we're really talking about T&E, it becomes much easier to address concurrency in a pragmatic manner.

The fundamental problem with concurrency centers on the startup of the production line. Once a production line is started, the degree of control the decisionmaker has over the program is vastly reduced. It is almost impossible to cancel the program completely, even if the weapons system is ineffective or the program is unaffordable. It is likewise almost impossible to stop the production line temporarily, even if major problems with the system have come to light, and it must be placed back in R&D for major redesign, engineering, and T&E. Once the production line has started, the only real control the decisionmaker has is control of production rate; and even this is extremely difficulty to enforce, because the pressures for rapid increases in production rate (despite serious system deficiencies) are immense. Thus, the key to sound weapons system acquisition is to ensure that the production line is not started until the decisionmaker has high confidence that the system will perform as advertised and will be operationally effective and operationally suitable. This can only be ascertained from T&E! Both DT&E (development test and evaluation) and OT&E (operational test and evaluation) are essential to provide this confidence to the decisionmaker. DT&E, which is accomplished by the service's developing agency, involves technical issues--the measuring of performance against specificaions. OT&E, which is accomplished by the service's independent OT&E agency, involves proving that the system: (1) functions effectively in the actual operational environment (which is generally adverse); (2) is operable, reliable, maintainable, supportable, etc., in the hands of typical fleet or field personnel; and (3) can defeat a determined enemy who is not playing by the rules and is employing countermeasures. Looking at the complete RDT&E/acquisition process, DT&E and OT&E are probably equally important. However, at the decision point for production line startup, OT&E is vastly more important! Only OT&E can answer the critical questions that must be answered if a sound decision on production startup is to be made. Thus the single most critical imperative of good program structure is that a solid phase of OT&E must be carried out prior to the startup of the production line! In a non-concurrent program, this is regularly done. In a concurrent program, however, there is frequently considerable resistance to structuring the program in this manner. The argument most commonly heard is that development is not complete, and thus the system is not ready for OT&E; that it would unfairly jeopardize the system to subject it to rigorous operational testing in this partially developed status. This rationale is fallacious. If the system is ready for production, it certainly can undergo a phase of OT&E to provide the essential data to the decisionmaker. The service independent OT&E agency is quite capable of understanding the exact developmental status of the system and structuring OT&E that is not unreasonable. It is essential, however, that this OT&E period be planned from the outset. If the program structure does not specifically include it, then the previously mentioned arguments of system unreadiness for OT&E will be self-fulfilling.

Thus in the final analysis, the concurrency issue centers on the question of a controllable program vs. an uncontrollable program. A controllable program is one in which the decisionmaker is able to respond to unexpected, adverse developments in the program with a wide range of alternative actions. An uncontrollable program is one in which the program plan has been rigidly prescribed, in which commitments must be made long in advance (when little hard data is available), and in which the decisionmaker, when confronted by unexpected problems, finds he has few effective options. This latter condition does not come about by accident. The Washington acquisition process is so fraught with peril for weapon system programs that the business of deliberately making programs uncontrollable has been developed to a fine art by many in the military-industrial complex. The best way to do this is to make the programs concurrent. Specifically, the objective is to get the production line started before data from the final phases of T&E (particularly OT&E) are available to show that the system is not ready for production. From the perspective of its proponents, this policy makes sense. As they see it, once the program gets into production, any last-minute problems can be smoothly ironed out as the production process proceeds. But if production startup is delayed to correct deficiencies, the program is instantly stigmatized, and the Washington wolves converge on the wounded caribou and pull it down. The program is lost, and six years and hundreds of millions of sunk RDT&E costs go down the drain. With this seen as the alternative, it is no wonder that many of those who care about military readiness see uncontrollability as a program virtue--the lesser of two evils. And concurrency is the principal mechanism employed to achieve uncontrollability. Incidentally, one of the most popular ways to gain approval of concurrency is to "fog up" the production line startup by creative terminology (pilot production, production for T&E, LRIP, prototype production, etc.)

The right answer, of course, is that it does not have to be this way. The RDT&E/acquisition process can be made to function in a sound, efficient manner--even in Washington. It is possible to structure programs that are both controllable and employ a reasonable degree of concurrency, when this is advisable. The second half of this paper and Figures 2-9 focus directly on this issue, showing in detail when concurrency should be employed, how much should be accepted, and how a concurrent program can be structured to remain controllable.

Before proceeding, however, two other aspects of this matter of uncontrollability should be discussed. The first involves when, in a typical program, controllability is most important. The answer is in the last year of development! The reason: because the time you most need control is when the unexpected is likely to occur, and this--by all odds--is at the end of development. Numerous programs proceed smoothly through years of RDT&E, garnering high praise along the way for good management and excellent weapons system performance, and then fall apart completely in the final T&E phases at the end of development. There are several reasons for this. The most obvious is that overall performance frequently cannot be assessed until development is complete. A second reason is that the decisionmaker generally has no assurance, during development, that the program is on-schedule and on-cost. Between milestones (which may be several years apart) the program may give every outward indication of being on track, yet in actuality be seriously behind the power curve. Only tough, uncompromising T&E can spotlight this. Another important reason is that most T&E during the years of development is done by industry or the developing agency, and there is a natural tendency to hold results close and to adopt an optimistic attitude about the seriousness of problems and the time and money needed for correction. Near the end of development, however, the service's independent OT&E agency conducts rigorous operational testing and reports results openly and without protective bias. For these and other reasons, the time period in which controllability--the ability to react with a wide range of options to unexpected, adverse program information--is most critical is near the end of development, the very period where concurrency is an issue.

The second aspect of controllability that should be understood is the degree to which our own DOD and Congressional administrative processes foster uncontrollability. The Pentagon's PPBS (planning, programming, and budgeting system) tends to lock-in money by program, fiscal year, and appropriation two or three years in advance. The Congressional authorization and appropriation processes lock it in even more tightly one or two years in advance. To achieve real controllability in a process as uncertain as advanced weapons system RDT&E, the decisionmaker often needs to be able to shift large amounts of funds to accommodate unexpected needs with no more than a month's notice. Not only is this process exceedingly difficult, but--rather than being regarded as a normal event--it is considered a sign of blood, signalling the wolves. It is not the intent here to go into this other problem area, but merely to point out that our own administrative processes make efficient acquisition quite difficult and, because of this, these processes stimulate those who would use concurrency unwisely to achieve uncontrollability.

Concurrency Maxims . It may be useful to list a number of "maxims," summarizing concurrency issues discussed above and developed in subsequent sections of this paper:

* Non-concurrency should be the norm, the basic standard, from which case-by-case departures in the direction of concurrency can be made, if warranted, safeguarded by T&E controls in program structure.

* The larger the program, the greater the concurrency that may be reasonable. (This is because of the greater complexity of large programs, and the greater scope of the production effort.)

* The more concurrency in a program, the greater the number of T&E phases that will be required, and the higher the program's T&E cost will be.

* As a rule of thumb, one year's concurrency is about the most that should be considered. (That is, the production line should not be started more than one year before development, including T&E, is complete.) In the few extremely large programs, it may be acceptable to have two years' concurrency.

* Concurrency should be measured from the startup of the production line. Earlier releases of production funds for production facilitization, tooling, or long-leadtime items are important elements of program structure and must be safeguarded by T&E, but they should not be considered in measuring concurrency per se.

* An absolute, inflexible rule--applying to all programs regardless of amount of concurrency--is that a solid phase of OT&E must be completed before production line startup.

* The more concurrency in a program, the more years the production rate will have to be constrained to a very low level (awaiting firm, final T&E data after development is complete). Conversely, in non-concurrent programs it is reasonable to ramp-up production rate much more rapidly.

* It is impossible (even in a non-concurrent program) to gain 100 percent assurance before production that the program is sound and the weapons system is free of flaws. Rather, concurrency should be managed so that the decisionmaker will have a range of reasonable options available when adverse T&E data are unexpectedly developed late in the program, so that he will not be "trapped" by an ill-advised, premature startup of production.

* Production startup will always have to be based on T&E results (particularly OT&E results) from engineering development models (EDMs). This leads to two conclusions: (1) EDMs must be quite "production representative" so T&E data therefrom will be valid; and (2) the idea of "commencing production early so as to produce hardware for T&E" is a non-starter. Certainly follow-on operational test and evaluation (FOT&E) should always be accomplished using the earliest production systems, but this should not be the rationale for their production. The most critical T&E is that accomplished using EDMs prior to the startup of the production line.

* The argument that urgency of need requires high concurrency and startup of production prior to good T&E (particularly OT&E) should be dismissed out of hand. The last place to compress an RDT&E/acquisition program to save time is in the transition from RDT&E to production.

* Contracts should not be negotiated during development which specify initial high production rates, or penalize the government if production is delayed or production rates are kept low initially.

How To Control Concurrency. While non-concurrent programs are generally sounder, it is possible to incorporate a moderate degree of concurrency in a program if close attention is paid to decision milestones and T&E periods as safeguards. Concurrent programs will normally have considerably more T&E phases than non-concurrent programs (and the cost of T&E will be greater) in order to gain the confidence needed to commit to production startup before development is complete. The keys to sound control of concurrency are: (1) Structuring a decision milestone into the program to govern the release of each major annual increment of production funds (startup of production and each subsequent annual production lot) until T&E phases prove that development is complete. [Note: The program should also be structured to include earlier decision milestones to govern the release of pre-production funding (facilitization, tooling, long-leadtime materials), but these are matters of sound program structure, not concurrency.] (2) Preceding each of these decision milestones with both DT&E and OT&E phases, the results of which will be considered by the decisionmaker at the milestone in determining whether or not to release the increment of production funds.

Examples of Controlling Concurrency. The application of these principles in representative programs with varying degrees of concurrency can be shown in a series of figures.

- Figure 2 displays the program structure of a typical non-concurrent program. Program Initiation marks the point at which the military service first commits to the program by placing it in the service Program Objectives Memorandum (POM). This occurs at the mid-point in a fiscal year, generally 18 months before first RDT&E funding. Milestone I is the major decision point which governs entry into Advanced Development (the "demonstration and validation" phase), with 6.3 funding. [Note: All milestones should normally be located near the beginning of a fiscal year, when annual increments of funds become available.] Milestone II is the major decision point which governs entry into Full-Scale Engineering Development (FSED), with 6.4 funding. The delivery of engineering development models (EDMs) is shown at a typically appropriate time. Milestone III is the major decision point which governs entry into production. The two final T&E phases of development are shown on this simplified diagram as DT-II (the final phase of development test and evaluation, DT&E) and OT-II (the final phase of operational test and evaluation, OT&E). The results of these T&E phases will be reviewed by the decisionmaker at Milestone III in deciding whether or not to commence production. In the example shown here, if T&E disclosed no problems, rate production would be authorized. As soon as production models are available, a phase of FOT&E should be conducted--always!

- Figure 3 shows this same non-concurrent program, but this time with the addition of pre-production funding for tooling and long-leadtime (LLT) items one year before the production decision. A minor decision point (shown by circle rather than triangle) is inserted to govern this early release of production funds, and an additional DT&E phase (and, if needed, an additional OT&E phase--shown with dashed lines) has been added to provide T&E data which the decisionmaker will consider in deciding whether to release the pre-production funds. Note that despite the early commitment of funds from a procurement account, this still classes as a non-concurrent program because development (through final T&E) is complete before the production line is started.

- Figure 4 shows what should happen in this same non-concurrent program when the final phases of DT-II and OT-II disclose deficiencies which, while not precluding limited production, are serious enough that they require correction and demonstration before ramp-up to rate production. A new major decision point (termed Milestone IIIB) is established a year later, and additional phases of DT-II and OT-II are inserted to provide data for the decisionmaker at Milestone IIIB. Thus, even though unexpected problems have occurred, the program does not get out of control.

- Figure 5 shows the program structure that might be appropriate for a large program. One year's concurrency is planned (that is, production line startup occurs one year before development is complete). Two major decision points for production are structured into the program from inception--Milestone IIIA for production line startup, and Milestone IIIB for rate production. A phase of DT-II and one of OT-II are scheduled in advance of each Milestone III, to provide T&E data to the decision-maker. A minor decision point (circle) is inserted a year prior to Milestone IIIA (with appropriate T&E) to control release of pre-production funds.

- Figure 6 now takes this same case (one year's planned concurrency) and shows what should happen if, at the planned rate production decision point (Milestone IIIB), T&E data disclosed significant problems which require correction. The decision is made not to ramp-up production, but to continue it at a low rate. [Note: If correctable problems occur once a production line has started, it is generally wiser to continue it at a low rate (even though hardware problems exist) than to shut it down, lay off personnel, terminate sub-contracts, etc., and then have to go through the reverse process, with all the associated training and qualification problems.] A new major decision point for rate production, Milestone IIIC, is added a year later, and additional DT-II and OT-II phases are scheduled to provide T&E data to verify correction of the problems. Thus, even though unexpected, serious, last-minute problems occurred in the program--which resulted in one-year's concurrency being stretched to two years—the decisionmaker retains control of the program and the adverse impact is quite limited.

- Figure 7 shows the program structure that might be appropriate for the few very large DOD programs. Two years' concurrency is planned. Milestone IIIA still governs the startup of the production line, and Milestone IIIB governs the rate production decision two years later. A minor decision point (circle) is inserted to control the intervening year's low-rate production decision. DT-II and OT-II phases precede each milestone. (Note that the initial phase of DT-II, and of OT-II if needed, will have to be conducted using ADMs, since EDMs will not be available.)

- Figure 8 now shows how this same program (with two years' planned concurrency) can be modified by the decisionmaker at Milestone IIIB in response to adverse T&E results. The planned ramp-up to rate production is not approved; production rate is held to a low level; a new Milestone IIIC is added a year later; and additional DT-II and OT-II phases are scheduled to verify problem correction. Thus, again, control has been retained at minimum cost even though unexpected development problems cause the planned two-year concurrency to slip to three years. (Note that since production models are available for the final phase of OT-II, FOT&E can be conducted at this same time.)

The Most Critical Control Mechanism. There is one single element of program structure which, over the years, has proved to be more effective than any other in managing concurrency and preventing programs from spiralling out of control. This is the phase of OT-II which precedes the startup of the production line! It is marked by a "bullseye" on Figure 9, the typical program structure of a large program with one year's concurrency (as shown previously in Figure 5). This phase of independent IOT&E—planned, conducted, and reported by the service's independent OT&E agency—should be structured into every RDT&E/acquisition program, without exception. Note that this phase of OT&E occurs one year before completion of development in large progrms with one year's concurrency, and two years before completion of development in the few very large programs with two years' concurrency. If program officials and industry are not willing to agree to this phase of OT&E at this time, the concurrency should not be approved.

Relationship between Concurrency and Program Size. Good rules of thumb are as follows:

- The great majority of programs in each service should be non-concurrent, following the program structure shown in Figure 2 (or Figure 3, if pre-production funding is desired).

- Large programs (defined as those in which total RDT&E cost is measured in hundreds of millions) can probably best be structured with one year's concurrency, following the program structure shown in Figure 5. (Note, however, the absolute requirement for an IOT&E phase prior to the production startup decision, as emphasized in Figure 9.)

- Very large programs (defined as those in which total R&D cost is measured in billions) should probably be structured with two year's concurrency, as shown in Figure 7. (Note, however, the absolute requirement for an IOT&E phase before production line startup, two years before completion of development!)

The most basic rationale for these rules of thumb has been given previously. There is another reason, however, which has to do with degree of service commitment. It is a fact of life that, with few exceptions, the service commitment to a program is proportional to its size. Thus, we can afford more concurrency in the much larger programs because the service can be counted on to provide the resources, manpower, priority, management attention, etc., necessary to bail out a large program that gets in trouble because of concurrency. This is not true of smaller programs.

Summary. Concurrency is an issue of critical importance in good RDT&E/acquisition. While it should not necessarily be ruled out, it injects major program risks, and extraordinary safeguards must be established to control it. If concurrency is correctly perceived as a T&E issue, and if it is accommodated in program structure as shown in Figures 5-8, it can be kept under control. Finally, in all programs, concurrent or non-concurrent, the absolutely essential control mechanism is a solid phase of OT&E before production line startup (Figure 9).

Fig. 1

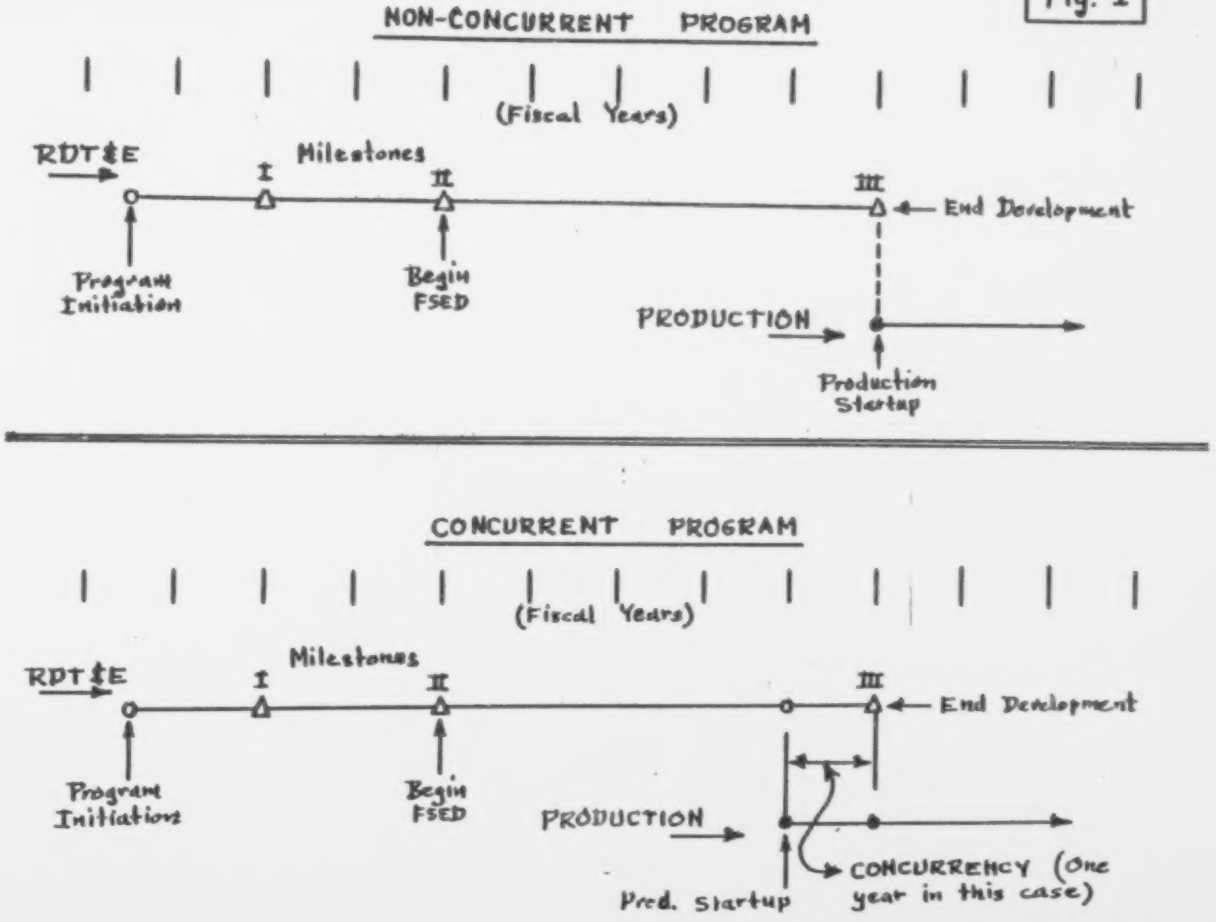

NON-CONCURRENT PROGRAM
(Fiscal Years)
RDT&E
Milestones
I
II
III
End Development
Program Initiation
Begin FSED
PRODUCTION
Production Startup
CONCURRENT PROGRAM
(Fiscal Years)
RDT&E
Milestones
I
II
III
End Development
Program Initiation
Begin FSED
PRODUCTION
Prod. Startup
CONCURRENCY (One year in this case)

Fig. 2

PROGRAM STRUCTURE – NON-CONCURRENT PROGRAM

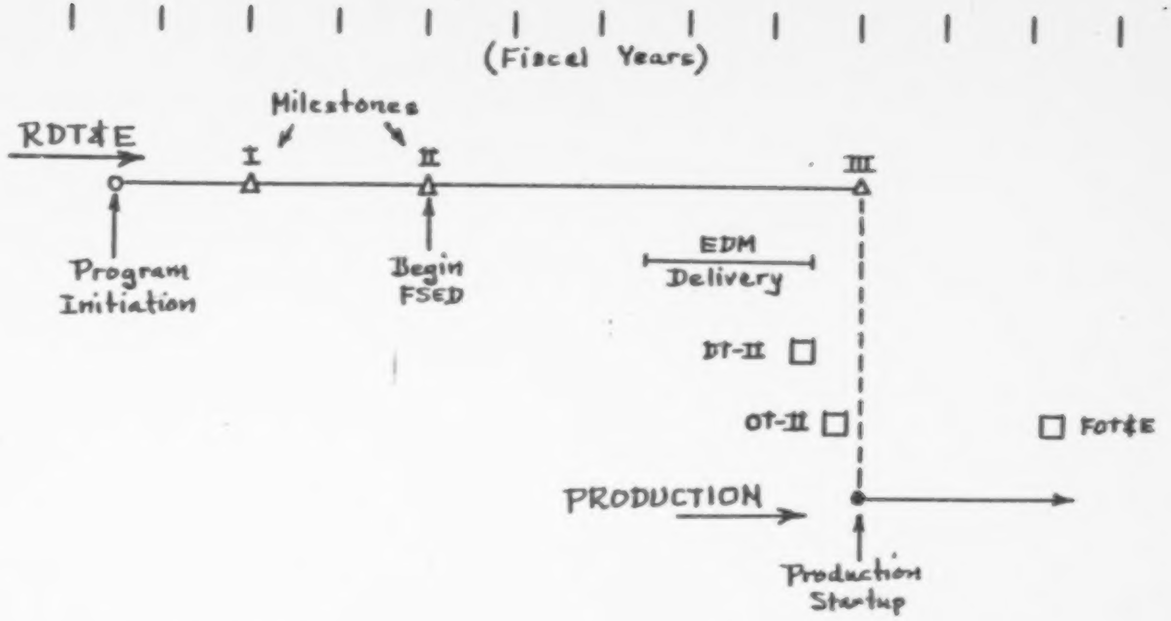

(Fiscal Years)
Milestones
RDT&E
I
II
III
Program Initiation
Begin FSED
EDM Delivery
DT-II
OT-II
FOT&E
PRODUCTION
Production Startup

Fig. 3

PROGRAM STRUCTURE – NON-CONCURRENT PROGRAM
(WITH PRE-PRODUCTION RELEASES)

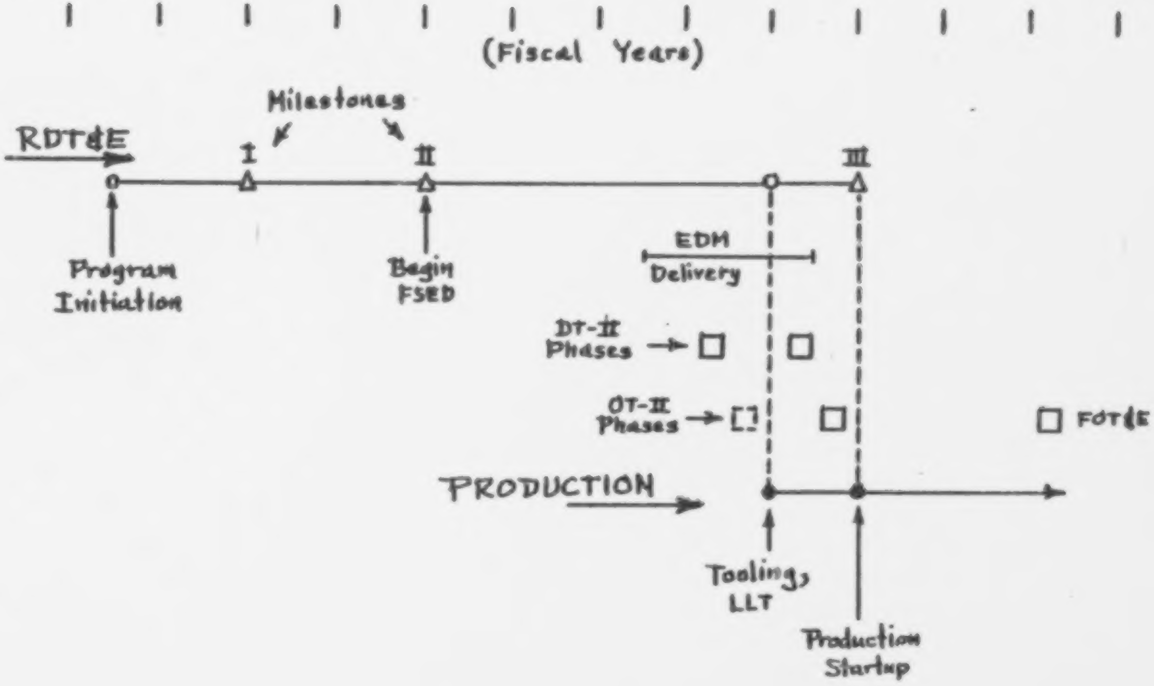

(Fiscal Years)
Milestones
RDT&E
I
II
III
Program Initiation
Begin FSED
EDM Delivery
DT-II Phases
OT-II Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup

Fig. 4

PROGRAM STRUCTURE - NON-CONCURRENT PROGRAM
(WITH ADVERSE DT-II/OT-II RESULTS)

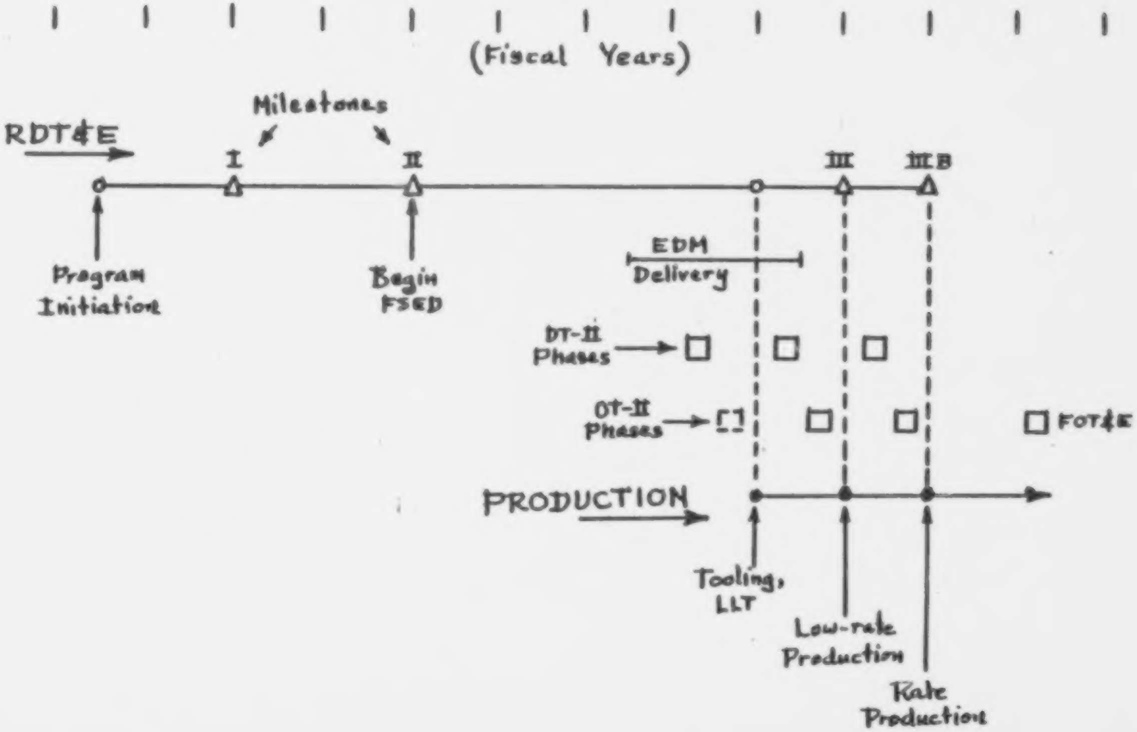
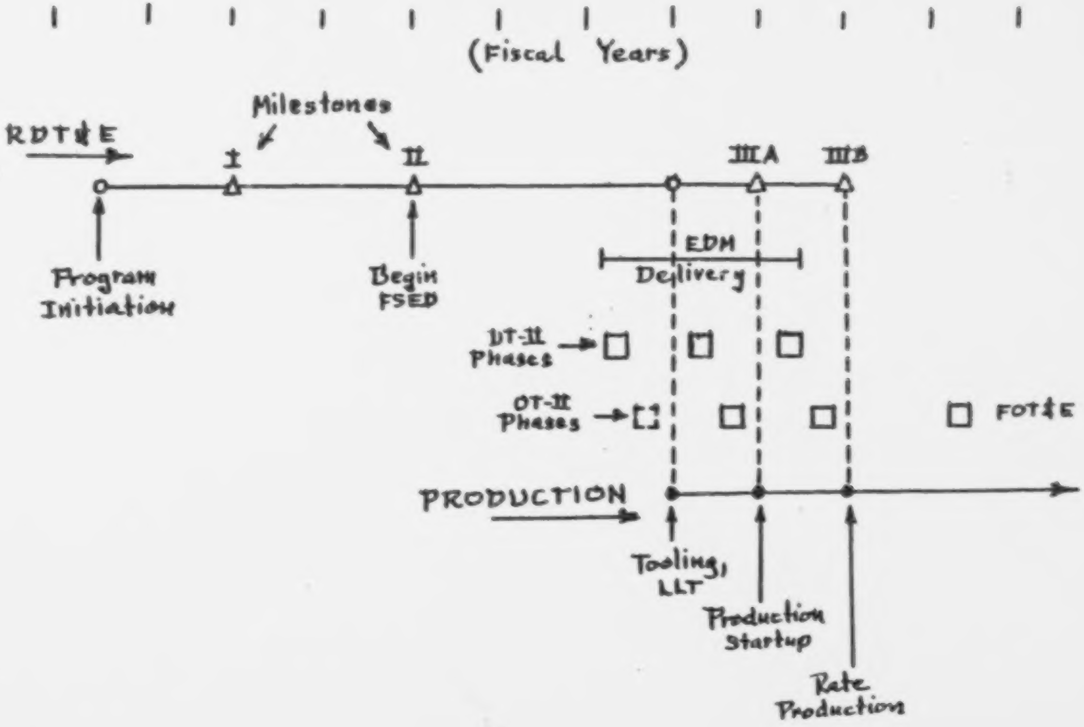

(Fiscal Years)
Milestones
RDT&E
I
II
III
III B
Program Initiation
Begin FSED
EDM Delivery
DT-II Phases
OT-II Phases
FOT&E
PRODUCTION
Tooling, LLT
Low-rate Production
Rate Production

Fig. 5

PROGRAM STRUCTURE - ONE YEAR'S CONCURRENCY
(WITH PRE-PRODUCTION RELEASES)


(Fiscal Years)
Milestones
RDT&E
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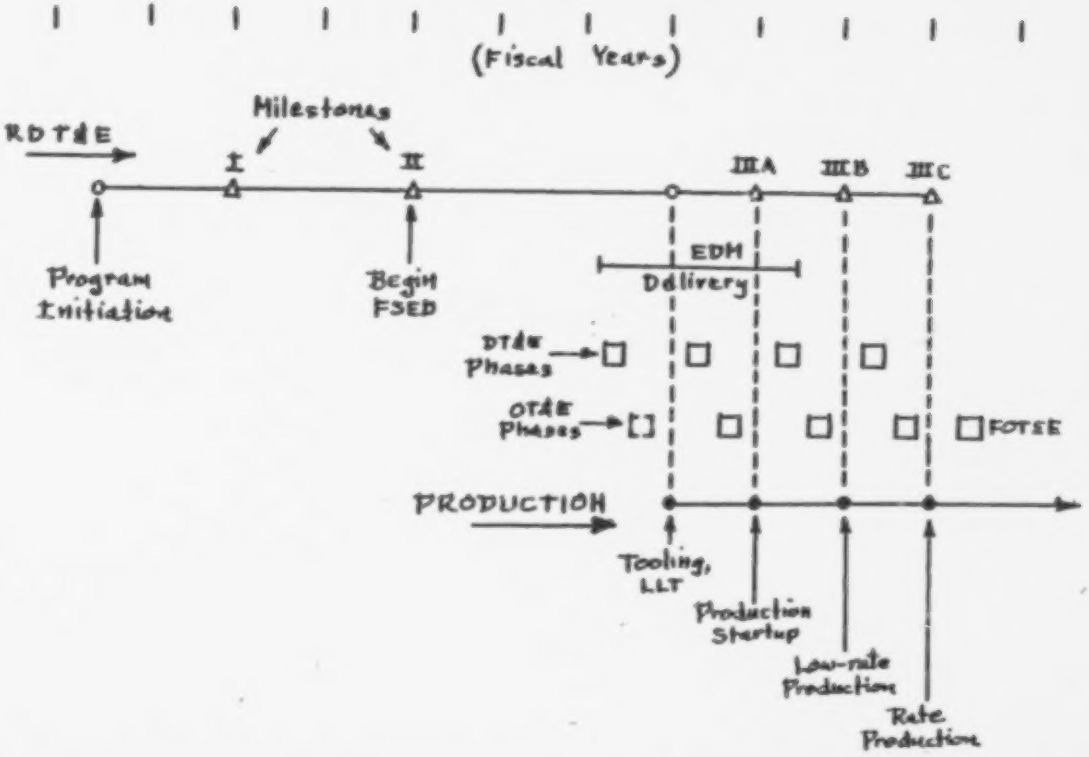
IIIB
Program Initiation
Begin FSED
EDM Delivery
DT-II Phases
OT-II Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup
Rate Production

Fig. 6

PROGRAM STRUCTURE – ONE YEAR'S CONCURRENCY
(WITH ADVERSE DT-II/OT-II RESULTS)


(Fiscal Years)
Milestones
RDT&E
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II
IIIA
IIIB
IIIC
Program Initiation
Begin FSED
EDM
Delivery
DT&E Phases
OT&E Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup
Low-rate Production
Rate Production

Fig. 7

PROGRAM STRUCTURE – TWO YEARS' CONCURRENCY
(WITH PRE-PRODUCTION RELEASES)

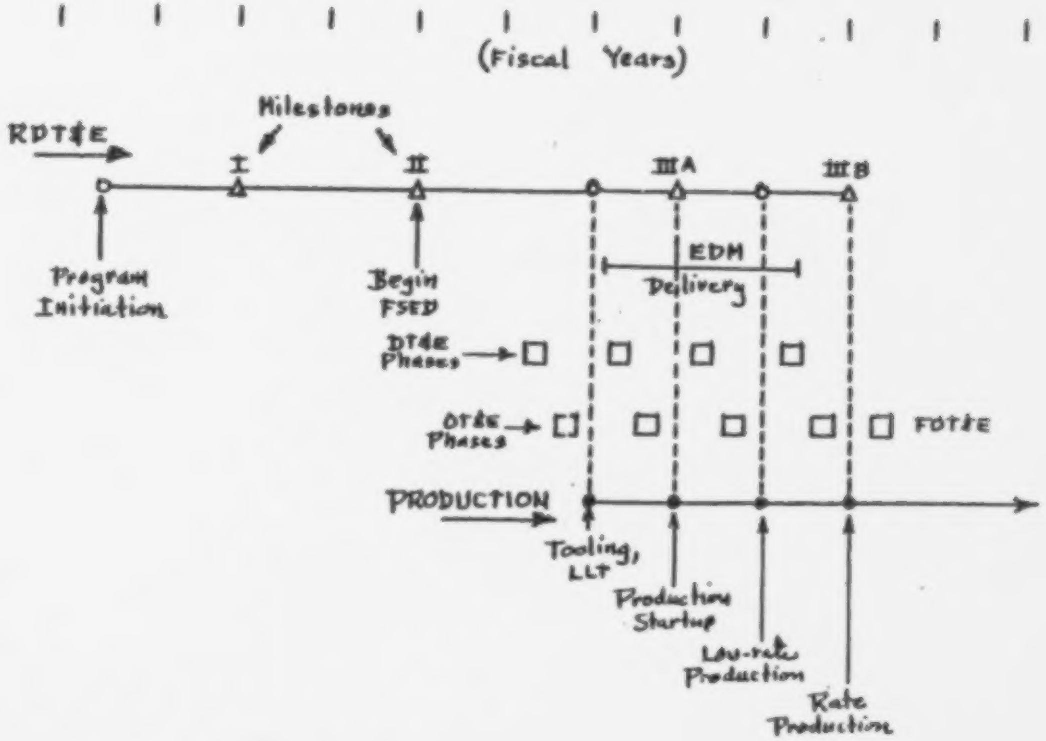

(Fiscal Years)
Milestones
RDT&E
I
II
IIIA
IIIB
Program Initiation
Begin FSED
EDM Delivery
DT&E Phases
OT&E Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup
Low-rate Production
Rate Production

Fig. 8

PROGRAM STRUCTURE – TWO YEARS' CONCURRENCY
(WITH ADVERSE DT-II/OT-II RESULTS)

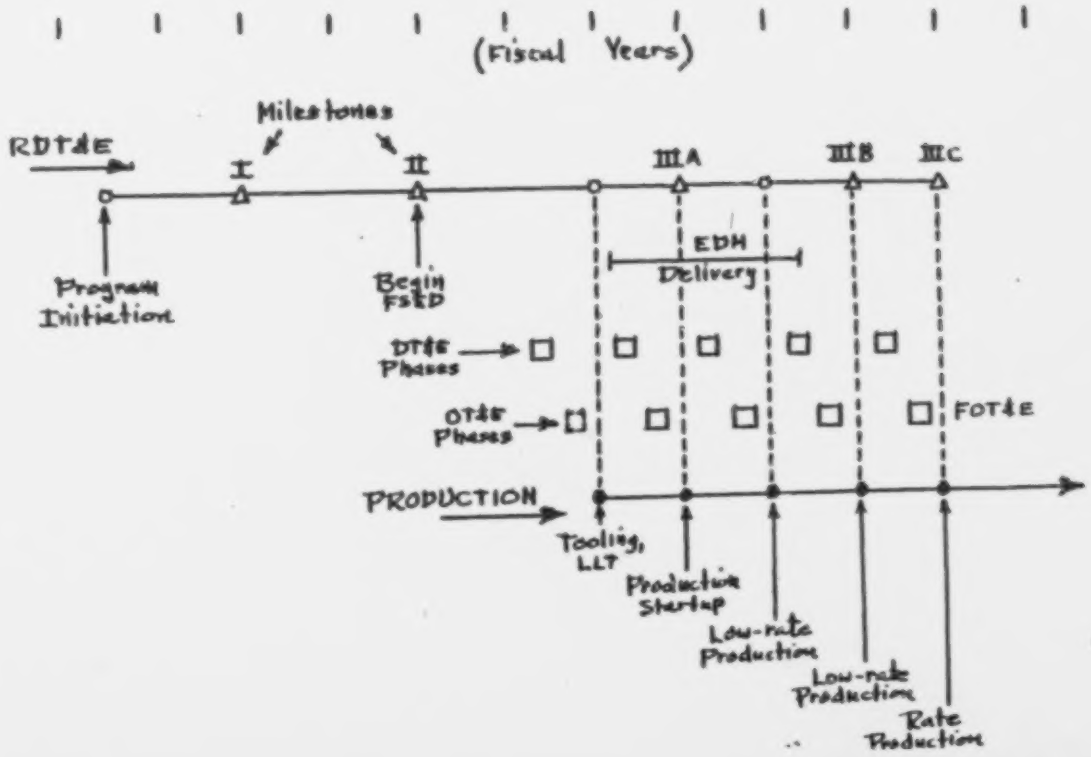
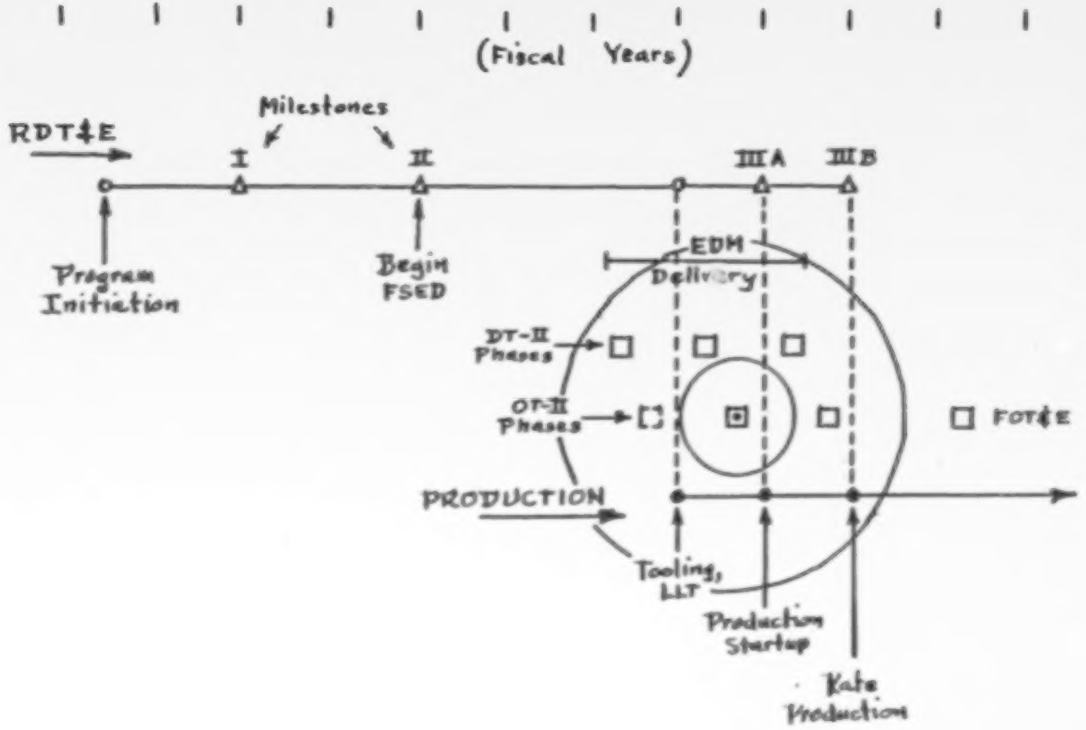

(Fiscal Years)
Milestones
RDT&E
I
II
IIIA
IIIB
IIIC
Program Initiation
Begin FSED
EDM Delivery
DT&E Phases
OT&E Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup
Low-rate Production
Low-rate Production
Rate Production

Fig. 9

THE KEY TO MANAGEMENT OF CONCURRENCY (OT&E PRIOR TO PRODUCTION STARTUP)


(Fiscal Years)
RDT&E
Milestones
I
II
IIIA
IIIB
Program Initiation
Begin FSED
EDM Delivery
DT-II Phases
OT-II Phases
FOT&E
PRODUCTION
Tooling, LLT
Production Startup
Rate Production